BIOLOG

OmniLog® Phenotype MicroArray™

User Guide

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1. Introducing OmniLog PM Software

In this section:
- ➔ **OmniLog PM's Suite of Programs**
- ➔ **OmniLog Software Steps**

The OmniLog® Phenotype MicroArray™ (PM) system includes everything you need to incubate and read microbes. OmniLog PM is a dedicated system for phenotype microarray testing and includes the following components:

- Dedicated Windows®-based computer with preinstalled OmniLog PM Data Collection module
- OmniLog Incubator/Reader

OMNILOG PM SYSTEM

The OmniLog Phenotype MicroArray (PM) Analysis Software package contains the following:

- OmniLog PM File Management/ Kinetic Analysis module
- OmniLog PM Parametric module

OmniLog PM's Suite of Programs

OmniLog PM Suite of programs contains three modules that work in conjunction with the OmniLog incubator/reader and Biolog's PM panels. These programs allow you to generate kinetic PM panel data from the OmniLog reader, manage and analyze the data, export it in a variety of raw and processed forms, and generate reports.

Program 1: Data Collection

- Drives the OmniLog Incubator/Reader
- Allows you to load, read, and unload panels from the reader
- Creates a kinetic data file for each panel
- Creates files for use in the other two programs
- Must be loaded on the OmniLog PM system computer

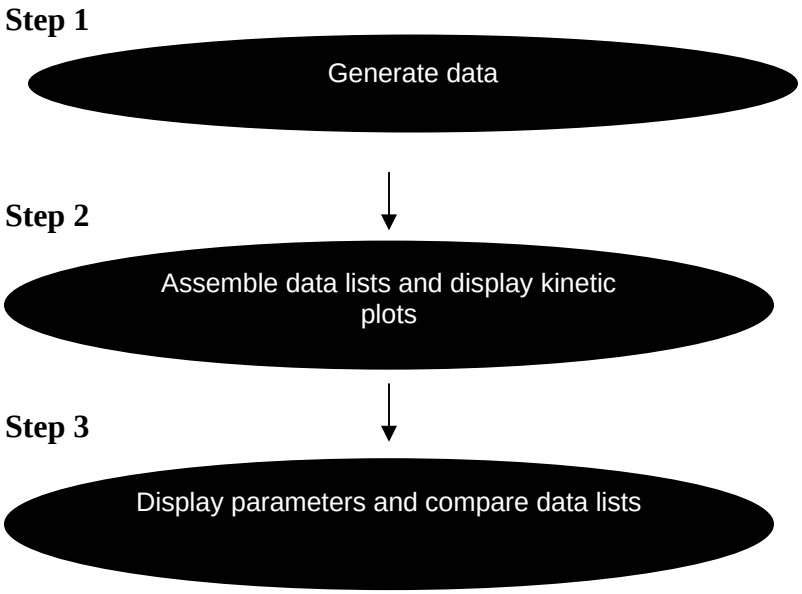
Program 2: File Management/Kinetic Analysis

- Allows you to assemble panel data files into data lists
- Displays kinetic plots of the data
- May be loaded on an office computer

Program 3: Parametric Analysis

- Takes data lists from the File Management/Kinetic Analysis program and calculates parameters from the kinetic data
- Allows you to compare two data lists
- May be loaded on an office computer

OmniLog PM Software Steps



Step 1: Generate data

The Data Collection program operates the OmniLog incubator/reader via the dedicated OmniLog computer. After you have inoculated a PM panel, load the panels into the OmniLog to begin data collection. The software guides you through the panel loading process, reads panels every 15 minutes during a user-defined incubation period, and walks you through the unload process.

Step 2: Make data lists and kinetic displays

The File Management/Kinetic portion of the software lets you assemble several panels of data into a unified set called a "data list." Data lists are the data file organizational format for the OmniLog PM software. These lists contains information about all the PM panels applicable to a given organism type or compound treatment and can handle replicate data runs of the same panel type. Once a data list is defined, you can view all the data on that list. OmniLog values in a data list are exportable to an Excel spreadsheet.

Step 3: View parametric data and generate reports

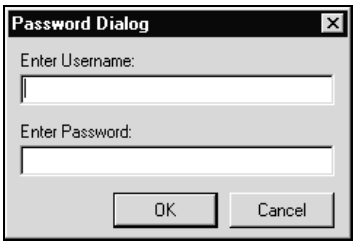
The Parametric program lets you take a data list, as defined by the File Management/Kinetic Analysis program, and generate an assortment of parameters. The program also allows you to compare parameters between two data lists. These parameters can then be displayed in various formats, output in reports, or exported into external files for further analysis.

User Functions

Logging In

When the system is operating in Restricted Access mode, all users must log in when attempting to perform certain functions. When a User logs into the program for the first time, he or she, will use the User Name and Preliminary password given by the administrator. The program will then automatically prompt them to create their own personal password. This User determined password will be used for subsequent logins.

To log into the Program Click on the **Log-In** box in the upper right hand corner of the Welcome Screen. The **Password Dialog** will appear once that function is accessed.



PASSWORD DIALOG WINDOW

Changing Users

If the software is already open and it is necessary to change users:

1. Click **Log-Out**. The button will change to **Log-In**.
2. Click **Log-In**. Now, the new user will be allowed to log in using the normal *Log-In* procedure.
3. A **Password** Dialog window will appear. Enter the new user's name and password. Press Enter.

Logging Out

OmniLog software has a predetermined time-out period. If the program is idle for more than 15 minutes, the software will Log-Out . You can prevent this logging-off by clicking "OK" when the time- out warning appears.

The Software is designed to automatically *Log-Out* a user after 15 minutes of inactivity, however, to log out during a session:

1. Click the **Log-Out** button in the upper right hand corner

Unauthorized Log-In Attempts

If someone enters an incorrect user name and/or password, the software will allow five attempts to enter the information correctly.

Subsequent attempts to open the program and log in using an incorrect user name or password will result in a warning tone and screen message just above the status bar noting, "unauthorized access has been attempted."

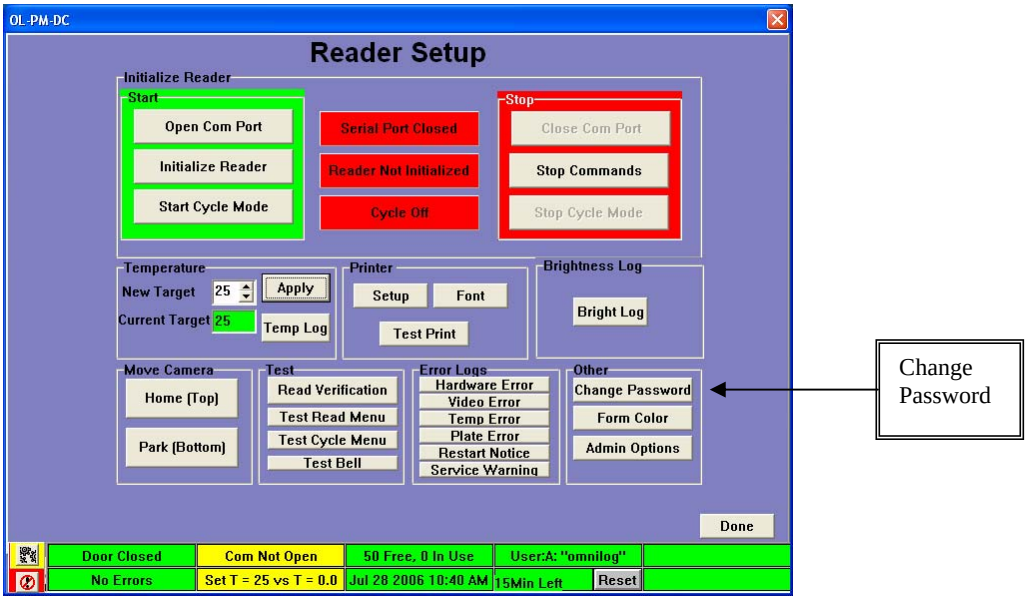
The message will remain until the Administrator logs into the program and clicks on the warning box.

If the Program Administrator cannot Log-In contact Technical Services for assistance.

Changing A Password

The Program will require users to change their password every three months, but Users may change their passwords at any time.

1. Click the **Reader Setup** button on the **Welcome** screen.
2. Click **Change Password** on the bottom right corner of the **Reader Setup** window.



READER SETUP WINDOW

3. In the **Change Password Dialog** window, enter your old password, new password, and new password confirmation.
4. Click **OK**.

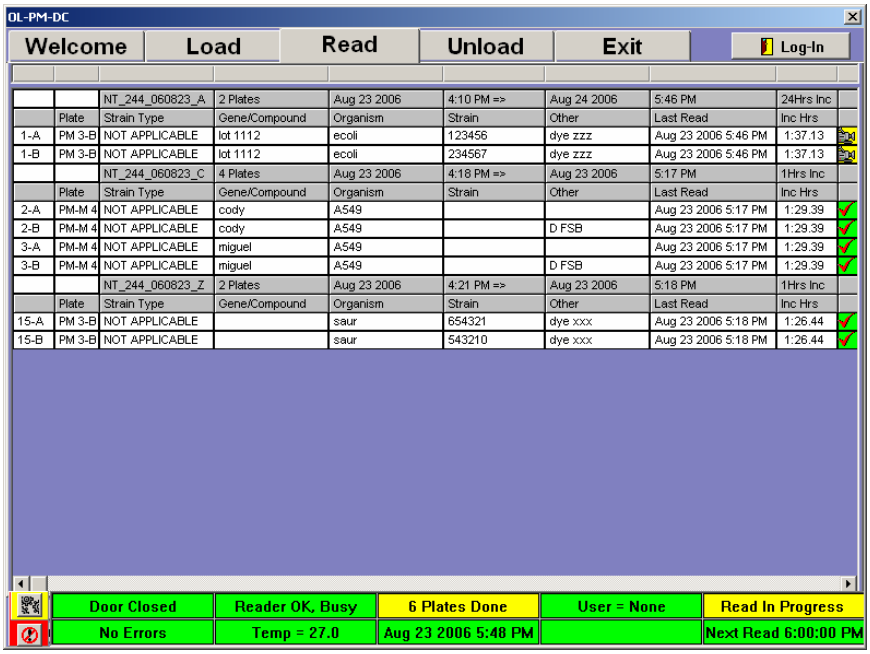
CHANGE PASSWORD DIALOG WINDOW

Note: Operating the software in an unrestricted mode will disable the Change Password button.

Loading and Reading Panels

Worksheets are the backbone of OmniLog PM DC; you'll use them throughout the process of loading and reading panels. They provide the organizational scheme for managing up to 50 panels and keeping accurate lists.

Each batch has its own worksheet. Each worksheet can accommodate information of up to 50 panels. If you have several batches of panels in the incubator/reader at the same time, you can view the read status for all worksheets by scrolling through the list on the Read window.



READ WINDOW (SHOWING STATUS OF BATCHES LOADED)

In order to make sure all worksheet information is correct, OmniLog PM DC directs you through entering the following information about each Panel in your batch:

- What date am I loading this batch?
- What unique Setup Code letters will I assign to this batch?
- Is this panel part of a project, and if so what is the project code?
- When were the panels set up (zero time for the incubation)?

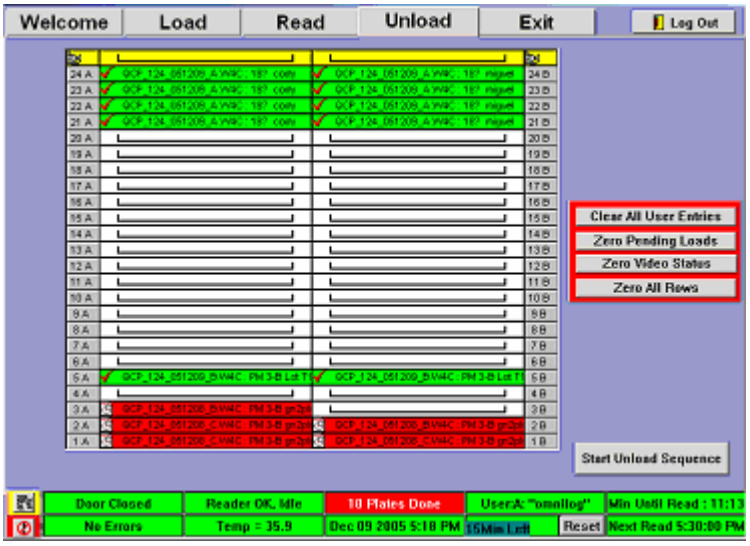
As incubation and reading progress, the worksheets for all panels in the incubator/reader will remain displayed on the Read window. You'll be able to view in-progress status for all Panels and all worksheets.

Unloading Panels

After the Read process is complete, you'll unload panels. Check the status on the Read window, remove the panels, and recheck the status.

The Unload window allows you to easily tell which panels are ready to be unloaded.

Shows which Panels are ready for unloading



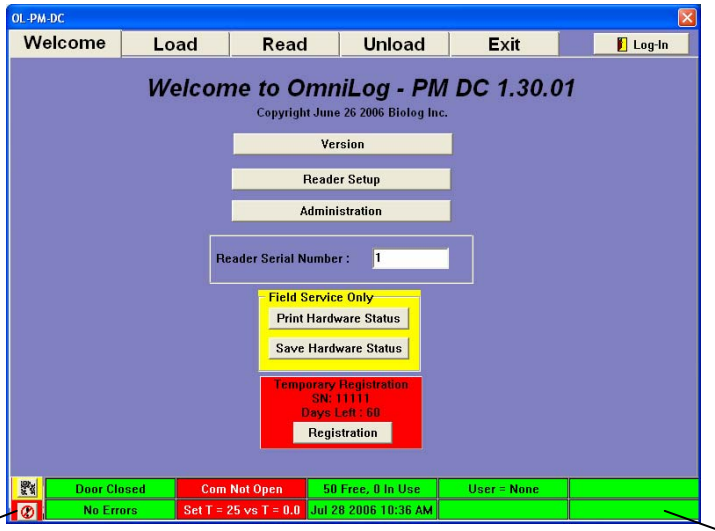
UNLOAD WINDOW

Once you ascertain which panels have completed the Read process, you simply open the incubator/reader door, remove one tray at a time, take the appropriate panel(s) out of each tray, replace the tray in the same slot of the incubator/reader, and close the door. If you wish, you can load a new batch while the door is open. The system allows 15 minutes for each load/unload cycle.

Using the Footer Bar

No matter which OmniLog PM DC window you display, there will always be a footer bar running across the bottom of the window. This offers a handy display of important status indicators, such as time, incubator/reader temperature, and the time until the next reading.

The footer bar consists of ten cells, laid out as follows:



Door status	**InformationReader Status**	**Panel Status**	**User Name and Access**	**Minutes to Next Read**
Error Messages	**Temperature Status**	**StatusCurrent System Time**	**Time to Auto Log Out**	**Time of Next Read**

Table 3-1 Explains the possible entries in the footer bar cells.

TABLE 3-1. FOOTER BAR ENTRIES

Cell	Message	Color	Meaning
Door Status			
	Door Closed	Green	Incubator/reader door is closed
	Door Open OK	Green	OK to have door open at current menu (When loading and unloading plates)
	Close Door	Yellow/ Green	Close the door to maintain temperature and ensure future incubator/reader movement
	Door Open Error	Red/ Yellow	The incubator/reader cannot move because the door is open

Error Messages			
	Hardware Error	Red/ Yellow	The incubator/reader is in mechanical failure
	Video Error	Red/ Yellow	The camera failed during reading
	Temperature Error	Red/ Yellow	The temperature is not at target setting while Panels are in the incubator/reader
	Plate Error	Red/ Yellow	A Panel is missing from the read position
	User Cancel	Red/ Yellow	User clicked "Stop Commands" / User time out commands
	Re-trying Contact	Red/ Yellow	The incubator/reader is not responding and the software is trying to re-establish contact
	Logged Auto Auto-Restart	Red/ Yellow	Loss of computer power during read/incubation period. Number of restarts will appear in this box.
Reader Status			
	Reader OK, Idle	Green	The incubator/reader is not moving or reading, cycle on, reader idle.
	Com Not Open	Red/ Yellow	Serial port is not initialized
	Reader Not Initialized	Red/ Yellow	Incubator/reader is not initialized
	Cycle Off	Red/ Yellow	The software is not in cycle mode
	Reader OK, Busy	Yellow/ Green	The incubator/reader is moving or reading, cycle on, reader busy.
	Test Cycle On	Yellow/ Green	Reader is in Test Cyle mode.
	Calibrating Lighting	Red/ Yellow	Light calibration in process.
	Air Read	Red/ Yellow	Incubator is performing Air reference read.
Temperature Status			
	Temp – XX.X	Green	This is the current incubator/reader temperature, which is in the target range
	Temp Error	Red/ Yellow	Temperature is out of range; shows actual vs. target temperatures
Panel Status			
	X Free, Y in Use	Green	Number of positions free and number in use
	X Plates Done	Red/ Yellow	Number of Panels ready to remove
Current System Time			
	Date and Time	Green	Date and time from operating system, updated every second (Month/ Day/ Year Hour: Minutes AM/PM)

User Name and Access			
	User: None	Green	No User is currently Logged in to the OmniLog Program
	User:A: “User Name”	Green	User is Logged in to the program. User name appears in this box along with a one letter code signifying that users access level. A: Administrator S: Setup User
	Unrestricted Access	Red	Administrator has set program to Unrestricted Access mode. All Aspects of the software are available to all Users.

Time Until Auto Logout			
	Blank	Green	No User is currently logged into the program
		Green/Red	12 Minutes before auto log-out (15-1 countdown). Reset button resets countdown to 15 minutes. Auto Log-out reset also occurs when program is in use. When box is red there are 5 minutes or less to auto log-out.
Minutes Until Read			
	Blank	Green	No Panels to read
	Min to Read 12:30	Green	There are less than 15 but more than 10 minutes to the next read
	Min to Read 9:30	Yellow	There are less than 10 but more than 5 minutes to the next read
	Min to Read 2:30	Red	There are less than 5 minutes to the next read
	Read In Progress	Red	OmniLog is now reading
Time of Next Read			
	Blank	Green	There are no Panels to read OR the next read is in more than 15 minutes
	Next Read X:XX AM/PM	Green	The next read is in less than 15 minutes
	Snooze	Button	The next read is in less than 5 minutes

Caution!

Never turn the software or reader off while the reader is busy. This could result in a mechanical jam that would require Biolog Technical Services to correct.

During normal operation, some of these cells may flash; this occurs because the footer bar cells are constantly updated as the software gets the latest status from the incubator/reader. Color-coding will help you identify the nature of the entry, as follows:

- In their normal "OK" state, the cells will display in black letters on a bright green background.
- Warning messages show as black letters on a yellow/ green flashing background.
- Error messages show as white letters on a red/ yellow flashing background.

Typically all footer cells will be green, with no warning or error messages. However, there are three general situations when the cells will change color and contain warning or error messages, as follows:

Notice Messages

Notice message alert to OmniLog status, but they do not require immediate action or necessarily mean the incubator/reader is not operating normally. Notice messages include:

Cell	Message	Color	What To Do
Door status	Close Door	Yellow/ Green	Close the OmniLog door
Panel Status	X Plates Done	Red/ Yellow	It is time to remove X number of Panels
Temperature Status	Not at Target Temperature	Red/ Yellow	If this occurs when there are no Panels are in the incubator/reader, be sure to change or set temperature when the OmniLog is empty. Wait until the incubator/reader is at the new temperature (this usually takes less than 2 hours) before loading new plates.
Error Message	Com Not Open (Reader) Not Initialized Cycle Off	Red/ Yellow	During normal use, keep the Com port open, the incubator/reader initialized, and the cycle mode on. During system verification testing (see Section 8), these error messages may occur.

Reader Busy Messages

Reader Busy messages caution you not to take certain actions because the incubator/reader is reading or about to read. They include:

Cell	Message	Color	What To Do
Minutes Until Read	< 5 minutes OR Read in Progress	Red/ Yellow	Do NOT use the software while the incubator/reader and is busy. Wait until "Reader Idle" appears in the Reader Status cell before you use any software features or try to send any additional commands to the incubator/reader.

Error Messages

Error messages are urgent. They indicate that something has gone wrong and the incubator/reader is not functioning as it should. They include:

Cell	Message	Color	What To Do
Door Status			
	Door Open Error	Red/ Yellow	The incubator/reader is trying to move, but cannot because the door is open. As long as the door is open, the warning bell will ring every second and the "Interrupt" light will illuminate. Close the door and the OmniLog will continue normally.
Error Status			
	Hardware Error	Red/ Yellow	See Section 8
	Temperature Error	Red/ Yellow	See Section 8
	Video Error	Red/ Yellow	See Section 8
	Plate Error	Red/ Yellow	See Section 8
	User Cancel	Red/ Yellow	See Section 8
	Re-trying Contact	Red/ Yellow	See Section 8

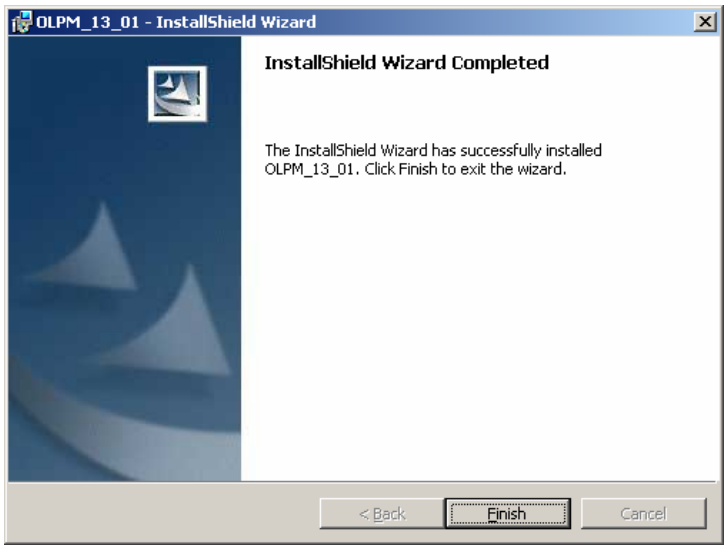
If you are unable to clear up any of these errors, call Biolog Technical Services.

2. OmniLog PM DC Module: Installation and Registration

In this section:
➔Installing the OmniLog Software
➔First Log-In and Setting Up an Administrator
➔Registering Your Software

Installing the OmniLog Software

1. Insert the OmniLog Software CD into the CD ROM drive.
2. The OmniLog Software setup Windows Installer will initialize. This will take a few moments to prepare.
3. The **OmniLog Software – Windows InstallShield® Wizard** will appear. Click **Next**.



4. The **License Agreement** will appear. Review the terms and select the '**I accept the terms in the license agreement'** radio button. Click **Next**.
5. Carefully review the **Readme Information**. Click **Next**.
6. The next screen that appears gives you the option of where to install the OmniLog root directory folders:

   Destination Folder - The root directory, OmniLog software, may be installed anywhere on a stand alone PC or on a network drive. If you do install the directory on a network drive, please remember that this program is currently not designed for multiple users at one time.

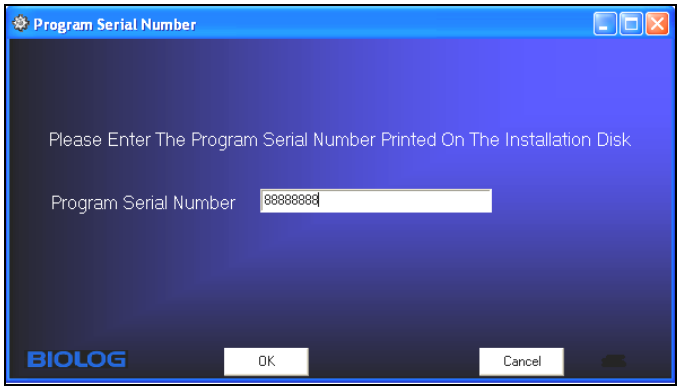
   - The default/suggested installation location is \Program Files\Biolog\OLPM_XX_XX. **(e.g. version 1.30.01 is 13_01).** Click **Next** to accept this default location.
   - To choose your own location, click **Change**. Select the **Look In** pull down menu to browse for a location. Select the location (…\Biolog\OLPM_XX_XX path is required.) Click **OK**.

Important!

- *The person installing the software must be logged in through the Windows operating system as the Administrator.*
- *This version functions only on computers with regional and language options set to English.*

7. Now the **InstallShield Wizard** is ready to begin installation. Choose **Back** to make any changes, **Cancel** to exit the InstallShield Wizard and not install the program, or **Install** to proceed with installation.
8. The next screen that appears asks you to enter the serial number of your program (found on the spine of the software jewel case). Enter the **serial number** and click **ok.**

Note:
For more detailed information on installation and registration see 00P148 Biolog OmniLog Phenotype MicroArray Data Collection Software Installation and Registration located within the installed main program folder.



9. The **Installing OmniLog Software** screen will appear while the installation is taking place. Click **Finish** when the InstallShield Wizard Completed screen appears.

The following shortcut icon will now be installed on your desktop:

The OmniLog shortcut is the main program. Click on this icon to open the main program.

Please remember that the OL DC program will count down for up to 60 days from date of software installation. After 60 days the software will display a User Registration reminder within the program.

First Log-In and Setting up an Administrator

The program is ready to be opened for the first time. The program operates in the Restricted Access Mode or Unrestricted Access Mode.

Restricted Access Mode requires that only the **Program Administrator** oversees and controls who has access to the program. The person who is designated as the Original Program Administrator should perform the first Log-in. This individual then manages who has access to the application and what tasks they can perform. More that one user should be assigned Administrator Privileges on the User List.

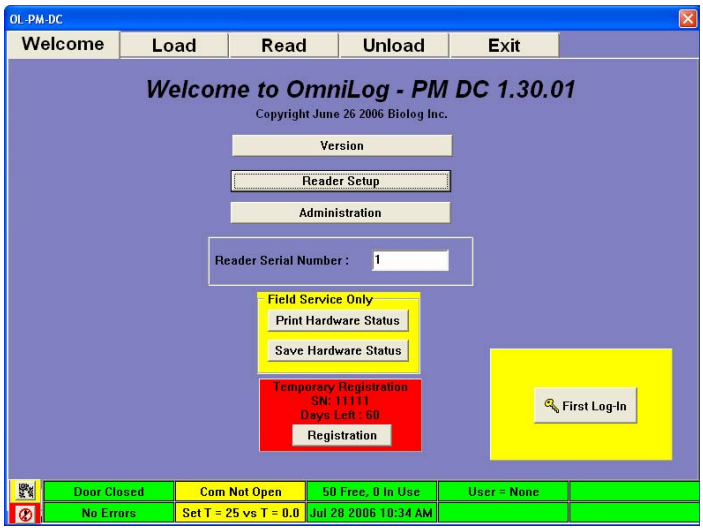
The Administrator will:

- Assign User names and passwords for those who will use the system.
- Assign access privileges to each user.

The following steps must be implemented by the user who will act as the program Administrator.

1. Click on the **OL PM DC** shortcut icon on your desktop.
2. The **Welcome** screen will appear. Click the **First Log-In** key in the lower right hand corner.

Note:
Not all users will have full administrative privileges. To learn more about assigning user names and passwords, as well as setting up different levels of user access, please refer to *Section 4.*



OmniLog software has a predetermined time-out period. If the program is idle for more than 15 minutes, the software will Log-Out . You can prevent this logging-off by clicking "OK" when the time- out warning appears.

3. The **Administrator Dialog** box will open.
   - Enter a Username that is at least 1 character in length.
   - Enter a Password that is at least 6 characters in length and contains at least one number. *The password is case sensitive*.

4. Click **OK**.

5. Click on the **Log-In** box located in the upper right hand corner of the **Welcome** window. A **Password Dialog** box will appear.

6. Enter the Administrator username and password you set in **Step 3**. Click **OK**.

Note:
Not all users will have full administrative privileges. To learn more about assigning user names and passwords, as well as setting up different levels of user access, please refer to *Section 4: Program Administration.*

7. You will now be listed as the Original Administrator in the User List with full user privileges. The message in the upper right hand of the Welcome screen will shows the **Log-Out** button.

Registering Your Software

Note:
There is only 1 registration button access per session. Log-Out and Log-In for additional access.

Before working with the OmniLog it is important to register the software with Biolog technical service department. By registering the software you become eligible for software upgrades and you will receive regular correspondence from the company.

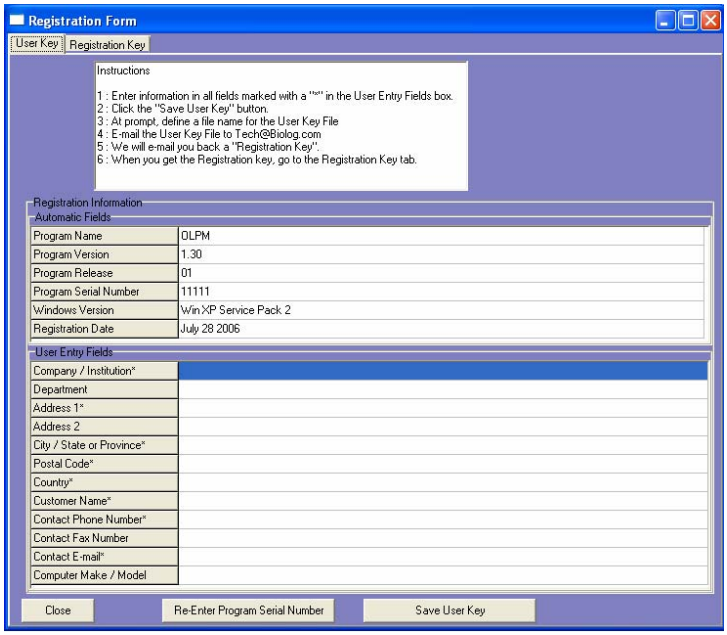
After initial installation, the **Welcome** tab will show **"Temporary Registration Days Left: 60"** in red. The software will count down how many days you have left to register. You must click the **Registration button** to start the registration process.

Registration Process

1. Generate a **User Key** and send to Biolog.
2. Load the **Registration Key** from Biolog.

Follow the steps outlined below to generate a User Key:

1. At the **Welcome** tab, click on the **Registration** button.
2. The **Registration Form** window appears.



3. Fill out <u>every line</u> of the **Registration Form**. (* Required Fields)
4. Click the **Save User Key** button.
5. A **Save As** window appears. Type a file name for the User Key File in the **File Name** field. The **Save as Type** field should show Text Files as the default file type.

   *Note: Save the **User Key File** in the **Certificate** folder on your hard drive **(…Biolog\OLPM_XX_XX\certificates).***

6. Click **Save**. The User Key will be saved as a text file.
7. Click Close.
8. E-mail the User Key File to tech@biolog.com.

- *Each computer requires a separate registration key.*
- *Your registration key should arrive within 2 business days, providing it is received Monday to Thursday during regular Biolog business hours (M-F 8:30 A.M. – 5:00 P.M. PST).*

Follow the steps outlined below to load the Registration Key:

1. Biolog will e-mail you a Registration Key. Save the attached registration key file on your hard drive **(…Biolog\OLPM_XX_XX\certificates)**.
2. Once you have saved your Registration key, open the OmniLog Software program, and click on the **Registration** button to open the **Registration Form**.
3. Click on the **Registration Key** tab that is on the registration form. Then click the **Load Registration Key** button to load the registration key file and process the registration.

4. The Temporary Registration box on the Welcome screen should now read "**Registered**", and turn from red to gray.
5. The Registration Button is no longer present.

Changing Operating System Startup Settings

The OL software shortcut to …\Biolog\run_ol.exe is automatically installed on the operating system Startup. Remove any OL_ID or OL_PM shortcuts from previously installed software.

To remove OL_ID… or OL_PM… shortcuts from startup:

1. Click on **Start**, click on **Programs.**
2. Select and click **Startup**.
3. Right click on 'OL_ID' or 'OL_PM' (shortcut icon) and click **Delete**. Confirm delete.
4. Click on the desktop to collapse selections.

To add 'run_ol.exe' shortcut to startup:

5. Click on **Start**, click on **Programs.**
6. Right click **Startup**.
7. Click on **File, New, Shortcut.**
8. Browse and select the '…Program Files\Biolog\run_ol.exe' and click **OK**, click **Next**, click **Finish.**
9. Close the screen.

3. OmniLog PM DC Module: Launch

In this section:
- **➔First Log-In & Setting up and Administrator**
- **➔Initializing the System**
- **➔Reader Setup**
- **➔Printer Status**
- **➔Setting the Temperature**
- **➔Shutting the System Down**

When you first purchase the OmniLog PM System, a Biolog service technician will set it up for you at your site. After that, you will keep the computer and incubator/reader on at all times. The installation disks that come with your system are meant for back-up only in the event of a system crash.

Note: OmniLog PM DC software works only on the computer supplied with your OmniLog PM System. Do not try to install the software on another computer.

System requirements and recommendations:

1. *Biolog recommends the use of Microsoft XP professional, service pack 2 operating system as it has increased stability compared to previous Microsoft operating systems versions.*
2. *Power settings: All power saving features must be turned off for operation of the system.*
3. *The Microsoft operating system must be reset (re-booted) 1-2 times per month. The OmniLog incubator/reader does not need to be shut down. This is to prevent possible system shutdown due to operating system stability factors.*

Important!

- *The person installing the software must be logged in through the Windows operating system as the Administrator.*
- *This version functions only on computers with regional and language options set to English.*

The OmniLog PM Data Collection (DC) module operates the OmniLog Incubator/Reader and collects data in an .OKA file format. The OL PM DC program is structured to move automatically through the incubation, read and data save process. Navigational tools include tabs to move from window to window, drop-down lists to choose from pre-set choices, selection bars, and fields to type in specific data.

OmniLog PM DC performs the following functions:

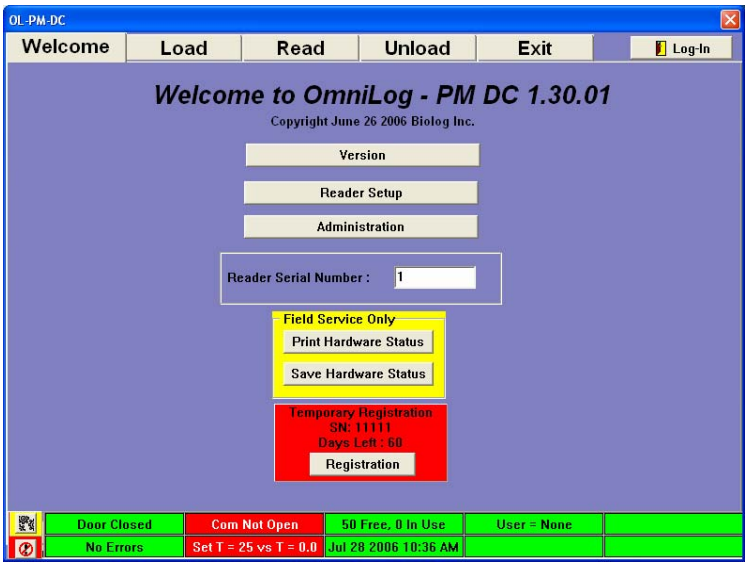
- Guides you through loading and reading panels using worksheets
- Guides you through unloading all or some panels when reading is complete

Before you use the OmniLog PM DC module, you must establish an ADMINISTRATOR user name and password (see Section 2). For Administration and security information see Section 4.

Initializing the System

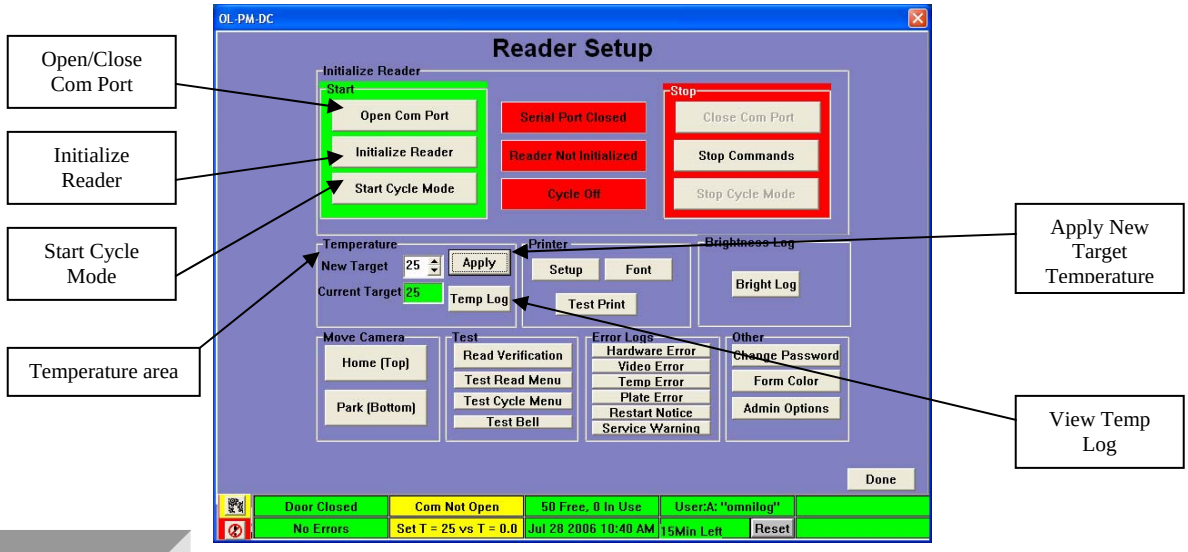
In the normal course of events, the system will have been initialized during set up for continual operation. However, stopping the system maybe necessary for preventive maintenance of the operating system (re-boot) or if you must move the OmniLog PM. Follow the instructions below to re-initialize the system.

1. Double-click the **OL_PM.exe** icon on your Desktop
2. The OmniLog software will initialize.
3. Click the **Log-In** button (upper right corner).
4. Enter **Username** and **Password.**
5. Press **Enter**.



WELCOME WINDOW

6. At the **Welcome** window, click the **Reader Setup** bar. The **Reader Setup** window will appear.



READER SETUP WINDOW

The Reader Setup window displays the set temperature and provides access to the temperature log of the OmniLog Incubator/Reader.

7. In the **Initialize Reader** area of the window, click the **Open Com Port** bar. The bar to the right will turn green and read **Serial Port Open** (this indicates that computer access has been enabled).
8. Click the **Initialize Reader** bar. The bar to the right will turn green and read **Reader Initialized** (this indicates that the computer and the incubator/reader are communicating).

Note: Allow up to 2 minutes for the initialization to complete. Camera box movement and system test are required.

9. The footer bar will say "Cycle Off". If any error messages appear, see Section 8.
10. All the buttons in the **Test** area of the **Reader Setup** window will be enabled. See Section 8 for instructions on using these functions.
11. Click the **Start Cycle Mode** bar. The bar to the right will turn green and read **Cycle On** (this indicates that an OmniLog read cycle is ready).
12. The footer bar will say "Reader OK, Idle".

Printer Status

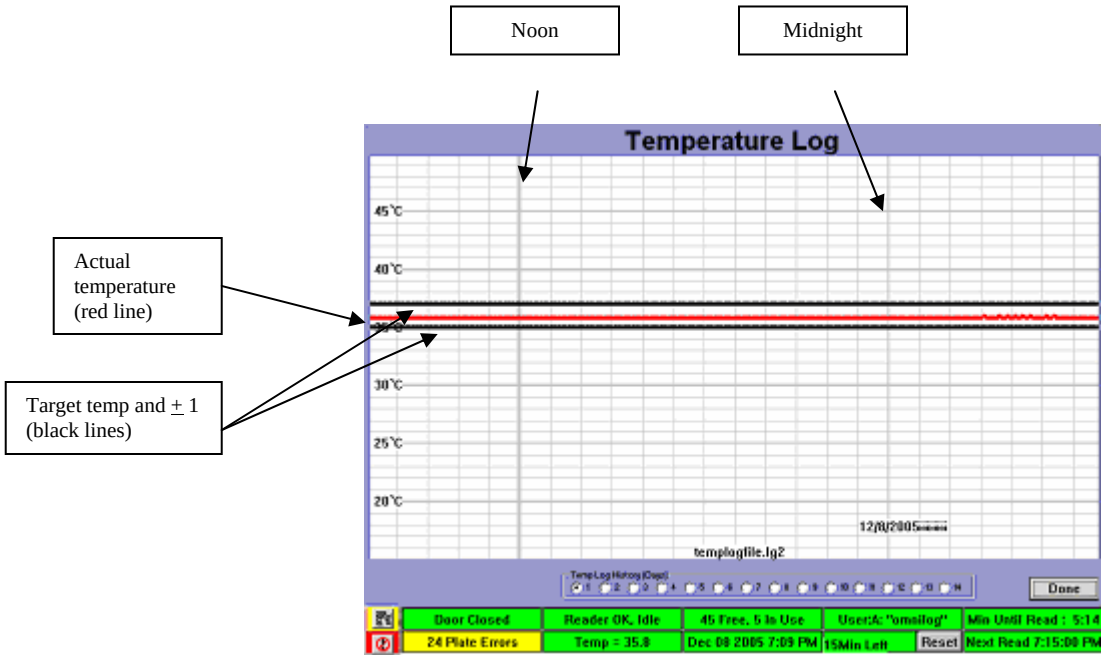
See Section 8 for a full description of Reader Setup functions.

Printer and software status is displayed in the **Printer** area of the **Reader Setup** window.

1. Click Test Print to verify printer operation. This will print three test pages.

Setting the Temperature

1. In the **Set Temperature** area of the **Reader Setup** window, use the **Set Temperature** arrows to select the target temperature.
2. Click **Apply**. The new target temperature will show as the current target temperature.
3. Click **View Temperature Log** to access a graphical log of 1-14 days of actual temperature readings for the incubator/reader. The **Temperature Log** window appears, displaying black horizontal lines that represent the target temperature range (1° less and 1° more than set value). The red line represents the actual temperature record. Each vertical line represents one hour. The medium thickness line represents noon and the thick line represents midnight.



TEMPERATURE LOG WINDOW

4. Click **Done**. The software will return to the **Reader Setup** window.
5. Click **Done**. The software will return to the **Welcome** window.

Shutting the System Down

> Caution!
>
> *To perform an emergency stop of the OmniLog while it is moving Click on the emergency Stop Commands button on the Status footer bar.*

As long as there are no MicroPlates™ in the reader with pending reads, you can exit the software by using the Exit menu or the "X" close button in the upper right of the screen. However, it's better to return to the **Reader Setup** window and shut down contact with the reader before you exit.

1. Click **Stop Cycle Mode**.
2. Click **Stop Commands**. This halts new communication between the software and the incubator/reader, but commands already in progress will continue.
3. To restore software contact with the incubator/reader, click **Initialize Reader**.

Note: Closing the Com (serial) port will shut down all hardware contact with the incubator/ reader.

Form Color Change

To change the screen background from Teal to White, or White to Teal, click Form Color on the Reader Setup window.

> Caution!
>
> *Admin Options button is only be used on the instruction of Field Service or Technical Service.*
> *Reader serial number and Frame grabber revision letters are preset before shipment.*

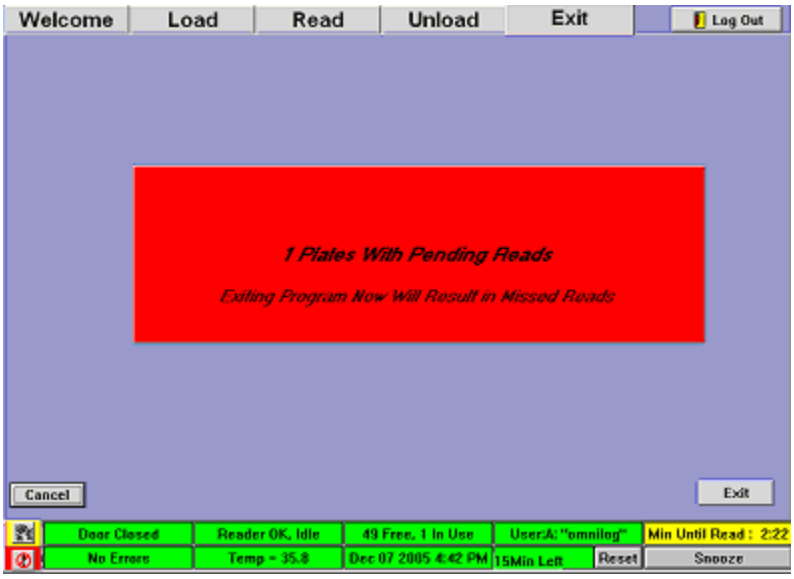
Quitting the Program

> **Caution!**
> *Quitting the program while there are pending reads will cause you to miss readings. Except when data loss is unavoidable, make sure the program and incubator/reader are on while there are pending Panels in the system.*

Since the computer you purchased with the system is dedicated to the OmniLog Incubator/Reader, you should not run any non-Biolog programs on it.

If you do need to quit the program for routine re-booting (or for example, to move the OmniLog Incubator/Reader to another location) the program will save all current Panel information and data to files. When you start the OmniLog program back up, the software will retrieve all the Panel information in it when you quit the program. It will resume all pending reads, using a current time as the read time (not the Panel setup time). If you quit the program while readings are pending, you will lose all the readings that would have occurred while the system was off.

1. Click **Exit** on the **Welcome** screen menu bar. A pending read status warning will appear in the center of the screen. If there are pending reads, the warning box will be red; if not, the box will be green and the message will say "OK to exit."



EXIT WINDOW

2. Click **Exit**. OmniLog PM DC will close.

Auto-Restart Function

The Auto-Restart function allows the OmniLog PM DC software module to automatically restart in the event of a power outage and power up occurrence. The program will recall the Read screen information and continue to read panels in pending worksheets. Only the reads that would have occurred during the power outage would be missing data.

In order to enable this feature, the OmniLog PM DC software module must be designated within the windows operating system to open with the computer startup process.

4. OmniLog PM DC Module: Administration and Security

In this section:

The OmniLog PM Data Collection (DC) module can be run in either Restricted Access or Unrestricted Access mode. The program administrator is given the option to select the preferred mode. The administrator can change the mode at any time, though no other user will have access to this function. The Administrator will be responsible for establishing system users and access levels through a variety of software controls if the program is run in Restricted Access mode.

What is Restricted Access Mode?

Restricted Access Mode requires that only users with Administrator privileges have the ability to oversee and control access to the program.

The Administrator will:

- Assign User names and passwords for those who will use the system.
- Assign access privileges to each user.
- Oversee the security of the system

Restricted Access Mode requires all users to log in with a User ID and password when entering the program or changing users. The program maintains files of the **User List**, **Log-In Log and Log-In Log Archive** to keep track of registered users, access privileges, and log in/out activity in the system.

All of these files are encrypted. The Log-In Log Archive files can be placed by the Administrator in the computer/network location of their choosing. This allows the Administrator to place the files in a location that has secured access.

Why Restricted Access Mode?

Restricted Access Mode ensures that data integrity and security controls are implemented in accordance with the guidelines of 21 CFR Part 11. It assists in compliance with federal Current Good Manufacturing Practices (cGMP) by ensuring the integrity of program use and electronic files.

Security Features:

- User List and Log-in Log
- Notification of failed log in attempts
- User password change
- User privileges

- Session time-out
- Password expiration
- Log-in archive

Electronic record integrity:

- Limiting access
- Original record integrity
- Documentation of changes (by whom and when)
- Audit trails

What if I don't work in a 21 CFR compliant environment?

No problem! It is easy for the program Administrator to assign full access privileges to anyone in your organization who will be using the program. This will give everyone the ability to use all of the system's features, with the exception of the ability to access the Administration Options button.

Another option is simply to use the Administrator ID and password for all users, thereby giving everyone equal access.

First Log-In and Setting up an Administrator

Please refer to *Section 2* for full instructions on how to set up an Administrator and Log In to the program for the first time. Ideally, this will be done soon after the program is installed.

Administrator Options

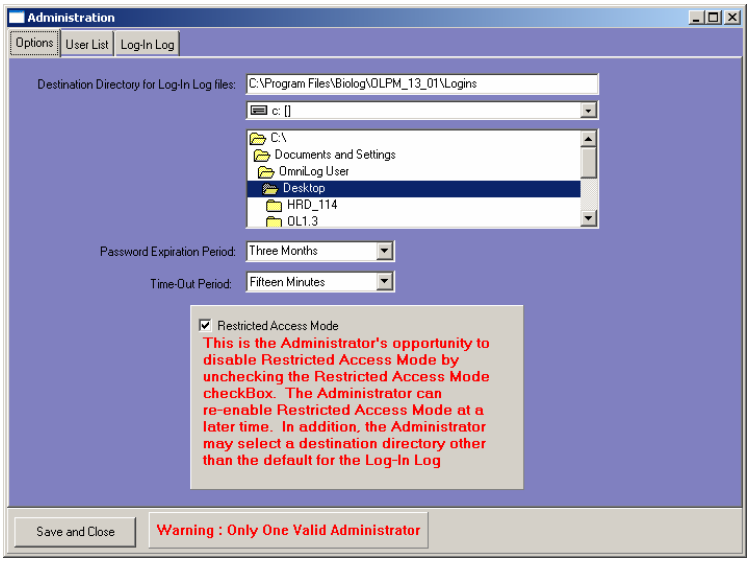
The Administrator (or a user with Administrator access rights) uses the Administration Options button, located on the Welcome window, to register new users and assign access privileges, as well as manage security controls. This button is only available when the program Administrator or a user with Administration access is Logged In; in all other cases it will not appear on the Welcome window.

Options Tab

Once you have selected the Administration Options buttons, the **Administration Window** will open. By default, it will appear with the **Options Tab** selected. Make your selections from the available options and then click the **Save and Close** button.

Important!

- *If you test Password Expiration Period or Time Out Period features using system clock changes, the program must be closed when system clock changes are made.*
- *If not the Administration screen may appear with each Administrator Log-in until 100 Log-In/Log-Outs occur.*



- **Destination Directory for LogIn-Log files**
  Shows the default directory where Log-In Logs Archive files are saved. Select the desired directory to place in the computer/network location of your choosing. You should select a secure location (for example, in a secure server or a password protected file folder).
- **Password Expiration Period**
  Use the pull down menu to select either **Three Months** or **One Minute**. The default is three months. This requires all users to select new passwords after 3 months. Select one minute to expedite validation testing only.
- **Time-Out Period**
  Use the pull down menu to select either **Fifteen Minutes** or **10 seconds**. The default is fifteen minutes. Select **10 seconds** to expedite validation testing only.

Remember:

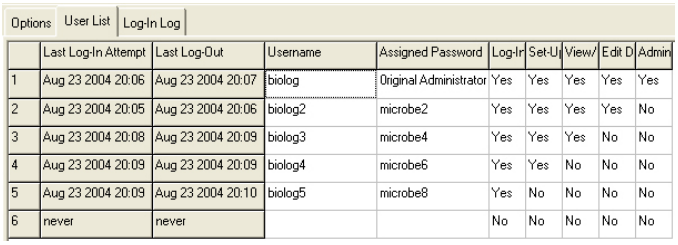
- *A user name must be at least 1 character in length.*
- *The password must be at least 6 characters in length, contain at least one number, and is case sensitive.*

Creating a User List

From the **Administration** window, select the **User List Tab**. Go to this list to add new users and assign levels of program access to those users, or to make changes to their level of access. User names can never be changed or deleted.

Adding new users and Assigning Privileges

1. Click the **User List** tab. A numbered list will appear, showing all users registered to that point, starting with the original Program Administrator (in row 1).
2. To add a new user, click in the next blank field in the **Username** column. Enter the new user name.


Options | User List | Log-In Log

	Last Log-In Attempt	Last Log-Out	Username	Assigned Password	Log-In	Set-Up	View/	Edit D	Admin
1	Aug 23 2004 20:06	Aug 23 2004 20:07	biolog	Original Administrator	Yes	Yes	Yes	Yes	Yes
2	Aug 23 2004 20:05	Aug 23 2004 20:06	biolog2	microbe2	Yes	Yes	Yes	Yes	No
3	Aug 23 2004 20:08	Aug 23 2004 20:09	biolog3	microbe4	Yes	Yes	Yes	No	No
4	Aug 23 2004 20:09	Aug 23 2004 20:09	biolog4	microbe6	Yes	Yes	No	No	No
5	Aug 23 2004 20:09	Aug 23 2004 20:10	biolog5	microbe8	Yes	No	No	No	No
6	never	never			No	No	No	No	No

3. Click in the blank **Assigned Password** field next to that new user name. Enter a temporary password for that new user.
4. Click in each **Privilege** box to the right, toggling between **Yes** and **No** to assign or deny specific access levels to that user.
5. Click the **Save and Close** button when you are finished.
6. Give the User Name and Password to the person you have registered, and refer them to *User Functions (*starting in Section 2, page 3), they need help using the program. Remember that the password you have chosen is only temporary; the user will be prompted to enter a new password the first time they Log In to the system.

Each new user must be assigned a level of program access by the Administrator. Consult Table 4-1 for a listing of these privileges.

Log-In Privileges

Privilege	What It Allows In OmniLog PM DC
Log-In	User will be able to log onto the OmniLog PM DC software. This privilege is in tandem with all other privileges. It should be revoked when a user no longer Uses the system.
Set-Up	User will be able to perform general ID functions (Reader Setup, worksheet, Load, Unload).
View/Print	User will be able to view or print data from Read Menu and view error logs.
Edit	User will be able to mark Plates as done, Restore plate, clear all runs in progress, Snooze Function, and change temp or quit program with pending reads, clear error logs.
Administrator	User will have complete access to all aspects of the software, including all Administration functions.

TABLE 4-1: USER ACCESS PRIVILEGES, IN DESCENDING ORDER OF LOWEST TO HIGHEST LEVELS OF ACCESS.

Viewing the Log-In Log

View the Log-In Log by selecting the **Log-In Log Tab** on the **Administration** window. This feature of the software keeps meticulous track of the program's use in descending order of date (with the most recent date and log-in first). This log is non-editable.

The Log-In Log records the past 100 log-in attempts. For each log-in attempt, the Log-In Log records the username, date and time logged-in, whether the username is registered, and the date and time the person logged-out. The Log also records which privileges registered users have, and shows the program is in Restricted Access Mode. This creates an audit trail. As log-in records in excess of 100 drop from the list, they are saved to a "Read-Only" file (Logins/LoginLogXXXXX.csv[1]). When this saved Log-In Log archive file contains 100 records, subsequent records will be saved to a new Log-In Log archive file with a different date stamp.

Options | User List | Log-In Log

	Restric	Entered Username	Registe	Attempt Date	Log-Out Time	Log-In	Options	View/P	Edit Pri	Admini
1	Yes	biolog	Yes	Aug 23 2004 20:10	never	Yes	Yes	Yes	Yes	Yes
2	Yes	biolog5	Yes	Aug 23 2004 20:09	Aug 23 2004 20:10	Yes	No	No	No	No
3	Yes	biolog4	Yes	Aug 23 2004 20:09	Aug 23 2004 20:09	Yes	Yes	No	No	No
4	Yes	biolog3	Yes	Aug 23 2004 20:08	Aug 23 2004 20:09	Yes	Yes	Yes	No	No
5	Yes	biolog	Yes	Aug 23 2004 20:06	Aug 23 2004 20:07	Yes	Yes	Yes	Yes	Yes
6	Yes	biolog2	Yes	Aug 23 2004 20:05	Aug 23 2004 20:06	Yes	Yes	Yes	Yes	No
7	Yes	biolog	Yes	Aug 23 2004 20:04	Aug 23 2004 20:05	Yes	Yes	Yes	Yes	Yes
8	No		No	never	never	No	No	No	No	No
9	No		No	never	never	No	No	No	No	No
10	No		No	never	never	No	No	No	No	No
11	No		No	never	never	No	No	No	No	No
12	No		No	never	never	No	No	No	No	No
13	No		No	never	never	No	No	No	No	No
14	No		No	never	never	No	No	No	No	No
15	No		No	never	never	No	No	No	No	No

THE LOG-IN LOG

Table 4-2 defines each of the columns in the Log-In Log and describes what they mean.

[1] XXXXX is a five-digit date stamp

Column Name	Information Given
Restricted	Will always show **Yes** to indicate program was in Restricted Access Mode when user logged-in.
Entered Username	The User Name of each person who logged in is listed here.
Registered	If this person was an approved user, this entry will say **Yes**; if not, this entry will say **No**.
Attempt Date	This is the exact date and time the user logged in (or attempted to do so).
Log-Out Time	This is the exact date and time the user logged out. The entry here will read **Never** in the event of a failed log-in and when the program administrator is currently using the software.
	User Privileges
Log-In	**Yes** if access was given during that log-in period; **No** if not.
Set-Up	**Yes** if access was given during that log-in period; **No** if not.
View/Print	**Yes** if access was given during that log-in period; **No** if not.
Edit Data	**Yes** if access was given during that log-in period; **No** if not.
Admin	**Yes** if access was given during that log-in period; **No** if not.

TABLE 4-2: INFORMATION IN THE LOG-IN LOG.

Lost or Revoked Passwords

Occasionally, a user might simply forget or misplace their password. The user may have attempted entry 5 times with the incorrect password. If the user is NOT the only Administrator (Original Program Administrator), this situation is easily remedied. Any Program Administrator can easily go to the **User List** under **Administrator Options** and assign the person a new password. Make sure to re-assign the user's privileges as well, or the new password will not work.

Unrestricted Access Mode

If you've chosen to operate the OmniLog System in Unrestricted Access mode, none of the previous information in this section will apply.

- OmniLog will allow any user access to all features of the software.
- A notice will show in the upper right corner of the menu bar, indicating that the software is running in Unrestricted Access mode.
- There will be no need for log in or log out functions to operate all features.

- There will be no record of the Username for any of the subsequent data files to indicate who performed the testing.
- The user may change any or all settings available.

5. OmniLog PM DC Module: Loading and Reading Plates

In this section:
➔Checking Load and Batch Status
➔ Setting Up a Worksheet
➔Loading Plates into the Incubator/ Reader

Once your Plates are properly inoculated, the next step is to enter information into OmniLog PM DC. This information relates to organizing Plate data on worksheets, and managing files. Then you can load Plates into the incubator/reader.

OmniLog PM DC is an automated system that relies on proper record-keeping at the start of each batch. Be sure to proceed through these data-entry tasks with care.

The incubator/reader can hold up to 26 batches of Plates in a 24 hour day for each project code and one worksheet assigned to each batch. There are 2 loadable Plates per tray and 25 trays.

Checking Load and Batch Status

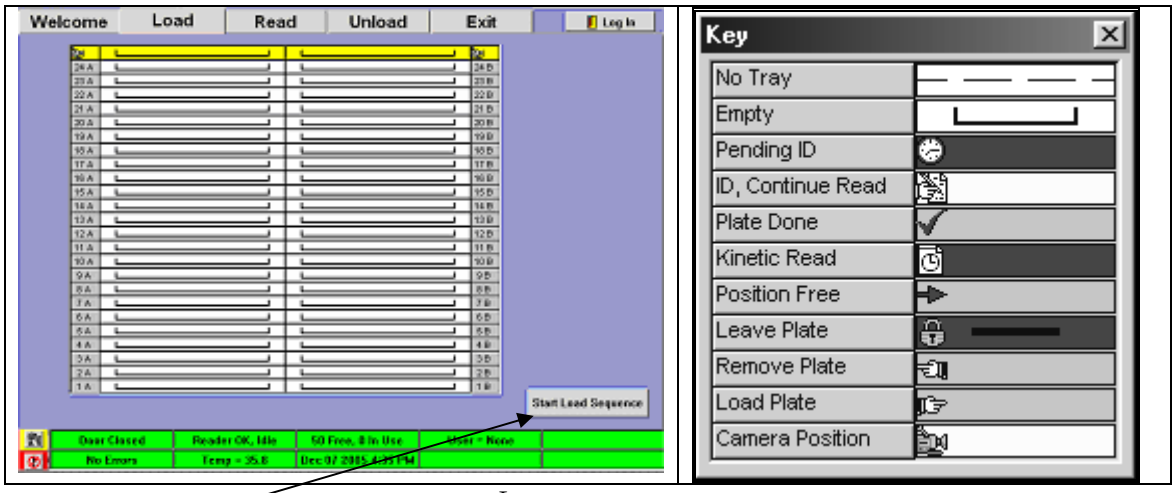
In the normal course of operation, the Read window will be displayed when you begin the process of loading Plates. The Load window shows a picture of the tray stack and indicates the current status of all Plates in the incubator/reader. The Read window gives details about each Plate currently in the incubator/reader.

Table 5-1 explains the entries you will see on this screen.

TABLE 5-1 LOAD WINDOW ENTRIES

Key	Explanation
Numbers along left and right edges	Correlate to tray numbers, starting with number 1 at the bottom through number 25 at the top
A and B designations along left and right edges	A = left column of Plates B = right column of Plates
White slots with ----------	Slot empty of both Plates and tray
White slots with [_____]	Slot contains tray, but no Plate
Green background with red checkmark icon	Slots that contain Plates that have been read and are ready to be removed
Yellow background with hand writing icon	Slots containing Plates that have been read but are not ready to be removed. Data still saving.
Red background with clock icon	Slots containing Plates that haven not been read yet

1. Click **Load** on the top menu bar.
2. Click on any row for an explanatory key.

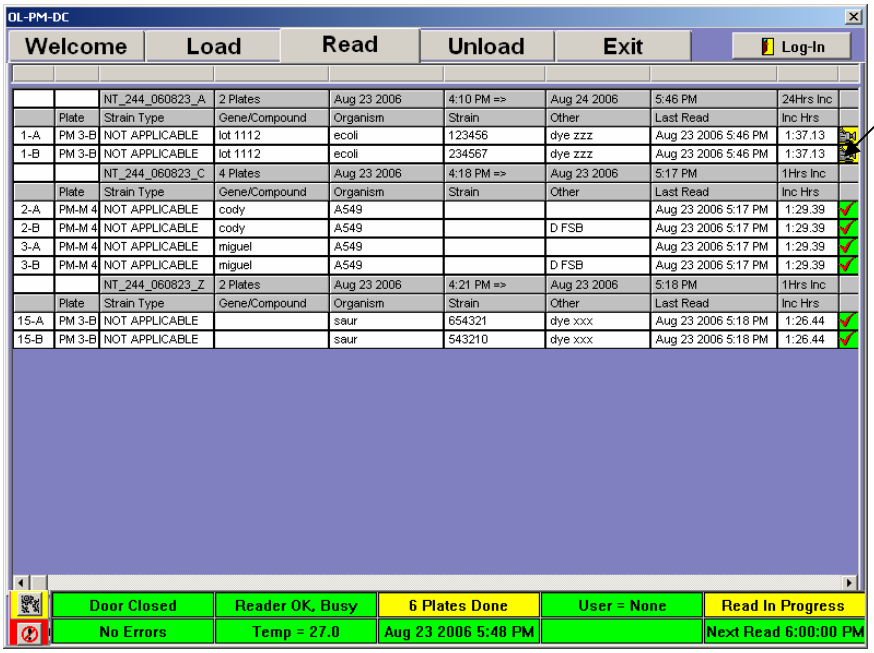


LOAD WINDOW AND LOAD KEY

Start Load Sequence

3. Check the **Load** window to ascertain which slots are open for new Plates. The Footer bar will state how many slots are available.

4. Click **Read** on the top menu bar. The Read window will appear, showing details for each Plate currently in the incubator/reader. Check batch status by tracking the icons to the right of the Unload column.



Check Plate status here

READ WINDOW

During normal operation, the Read window will display. The worksheets are shown in the order in which they were loaded, with the one that's been in the longest on top. Scroll down to see all results.

Each worksheet begins with a two-row header (the top one is yellow, the one beneath it, gray).

Table 5-2 explains the column headings on the **Read** window.

TABLE 5.2. READ WINDOW COLUMNS

Column Heading	What It Means
Heading 1 (yellow)	
XXX_NNN_YYMMDD_L	Worksheet code_OmniLog Serial Number_yy/mm/dd_Setup code
2 Plates	Number of Plates in a batch
Aug 23 2006	Setup date
4:10 PM ⇒	Time run began
Aug 24 2006	Current date
5:46 PM	Current time
24 hrs Inc	Time set for incubation

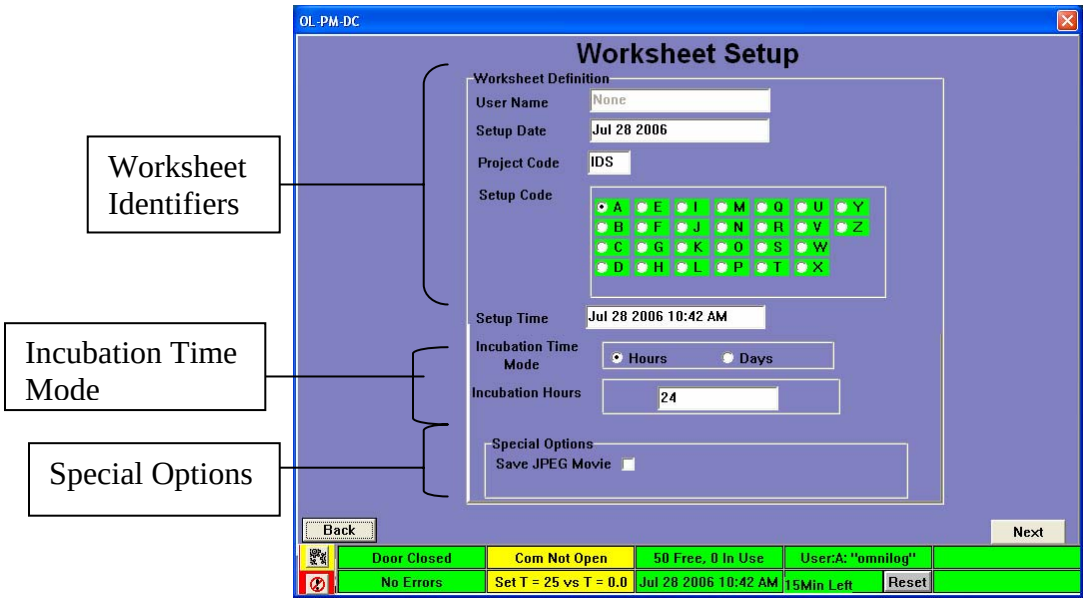
Column Heading	What It Means
Heading 2 (gray)	
	The designated tray position (tray number – side A or B)
Plate	The type of Plate used for that sample, PM#, Series (as applicable)
Strain Type	Strain type (not applicable for PM Panels)
Gene/Compound	The Gene / Compound field entry
Organism	The Organism field entry
Strain	The Strain field entry
Other	Other pertinent information you entered
Last Read	When Plate was read last
Inc Hrs	How long the Plate has been incubating
	Shows whether result is in-progress or final • green box with red checkmark means Done • red box with clock face means in-progress or not read yet • in-progress results are updated every 15 minutes, at each reading

*Note: The headings on the **Read** window worksheets reflect the information you selected during worksheet setup. As a result, these headings will change depending on your data entered.*

1. Check the **Read** window for in-progress and final identifications.
2. For more detailed results, click on any part of any row in the **Read** window. A **Plate Data** window will appear for that Panel.

Setting Up a Worksheet

Once you've established current load status, you must set up a worksheet for the new batch. Remember, each batch gets a separate worksheet.



Worksheet setup window

1. Click the **Start Load Sequence** bar at the lower right side of the **Load** window. The **Worksheet Setup** window appears. This window allows you to define a worksheet for the batch of Panels you are about to load.
2. Today's date automatically appears in the **Setup Date** field of the **Worksheet Definition** box. You may change it to any date you wish.
3. The worksheet and subsequent data files are named automatically, based on the setup date, a **Setup Code** letter, and a 3 character **Project Code**.
4. Enter a three letter **Project code**.
   - The purpose of the Project code is to give the user the opportunity of organizing data under a specific project name or number.

- If the user does not specify a Project code, the default code of **IDS** will automatically be selected.

5. Select a radio button **Setup code** letter.
   - The purpose of the setup code letter is to differentiate between different worksheets set up on the same date.
   - The worksheet setup menu will automatically enter the setup date as the current date and assign the next available setup code.
   - You can manually change both the setup date and code by clicking on the **Setup Date** field and **Setup Codes** radio buttons.
   - The codes already used for the given date will be disabled.
6. Click and select the **Setup Time**.
   - The default value in the **Setup Time** field is the current system time (this refers to time of day the Plates in the worksheet batch were set up).
   - You can change this value by clicking on the **Setup Time** field.
   - While the Plates are in the incubator/reader, the incubation time for the Plates will be calculated by the current system time minus the setup time you entered for the Plates.
   - All Plates in a worksheet batch will have the same setup time.
7. Select the Incubation Time Mode radio button: Hours or Days.
8. Make next selections as listed in Table 5-3 below.

Remember: Any selections you make on the Worksheet Setup window applies to ALL Plates in that batch.

Incubation Time Mode

TABLE 5-3: PROGRAM INCUBATION TIME MODE

Mode	What It Does
Mode Hours	Select radio button Hours: Click on the **Incubation Hours** field. **Information Input** window is displayed. Highlight and enter the numeric hours for incubation and reads or use any of the arrow buttons available to increase or decrease the hour value listed. Click **OK**, **Delete** or **Cancel**. Plates are scheduled to be read with readings occurring every quarter clock hour. As soon as a Plate has been read for the selected time in hours, it will be labeled as finished. You will then be allowed to remove the Plate and free up the position in the incubator/reader. Maximum time is 7 days for Kinetic analysis and 4 days for Parametric analysis.
ModeDays	Select radio button Days: **Incubation Days** radio button selection is displayed. Select the total days you wish to incubate and read (half day increments from 1 to 4.5 days). As soon as a Plate has been read for the selected time in days, it will be labeled as finished. You will then be allowed to remove the Plate and free up the position in the incubator/reader.

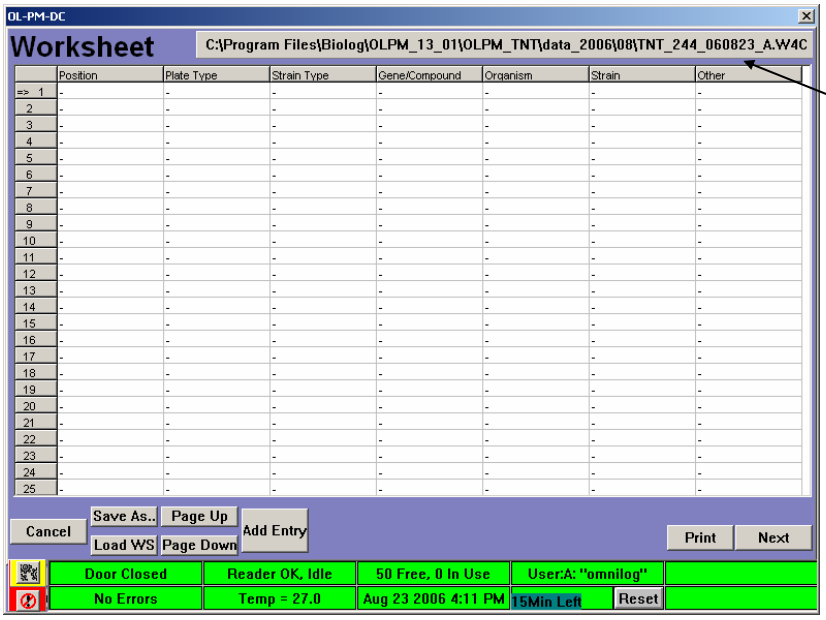
Special Options

9. OmniLog software allows you to select 'Save JPEG Movie'. For each panel read on this worksheet, a JPEG image will be saved for each read in a file to be viewed in the future using image processing software to view the image series as a movie.

- The JPEG files are saved in a folder within the saved Data Folder.
- Standard off the shelf image software may be used to view these files as a slide show.

Verify that all information on the **Worksheet Setup** screen is correct. Once the **Next** button is clicked, the worksheet will be locked.

10. Click **Next** to continue entering the worksheet (the Worksheet window will appear) or click **Back** to the **Load** window.



WORKSHEET WINDOW

Table 5-4 Explains The Actions of Various Buttons on This Screen.

TABLE 5-4. WORKSHEET WINDOW BUTTONS

Button	Function
Cancel	Ends worksheet process
Page Up	Allows you to view lower numbered entries
Page Down	Allows you to view higher number entries
Add Entry	Allows you to enter data for each Panel
Print	Allows you to print current worksheet
Next	Locks down the current worksheet entered
Save As	To save worksheet under designated file name
Load WS	To Load Pre-designated worksheet

Enter Panel Information Fields

11. Click **Add Entry**. The **Plate Information** window appears.

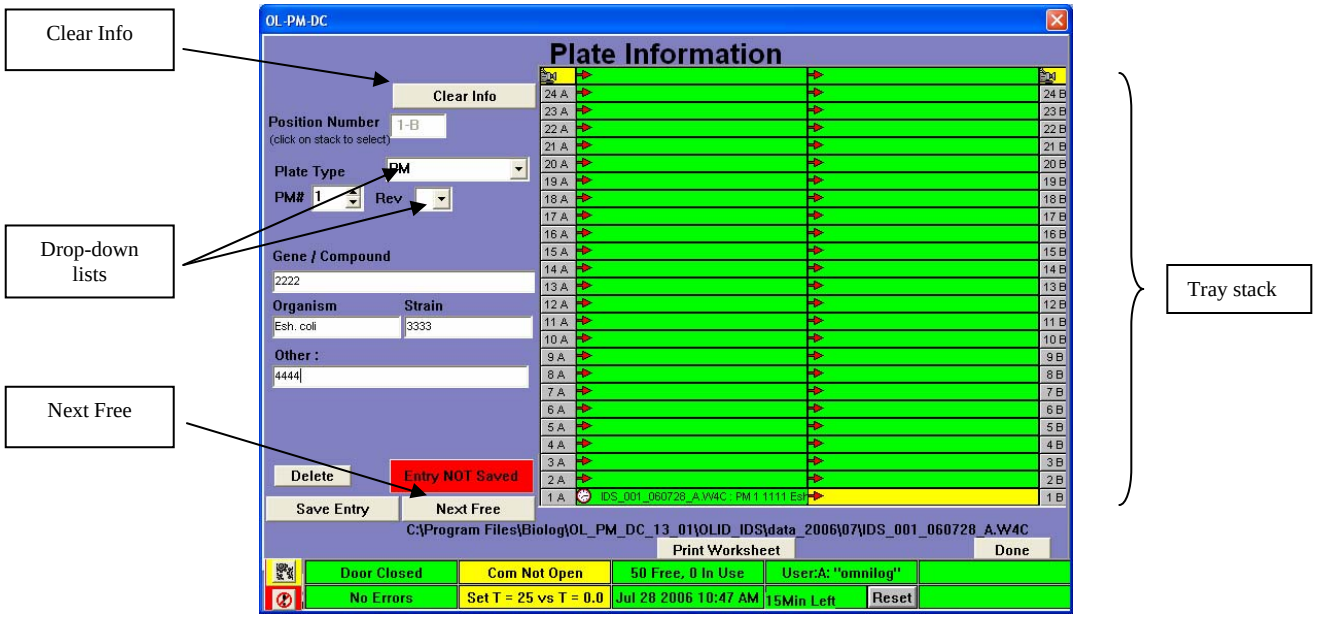
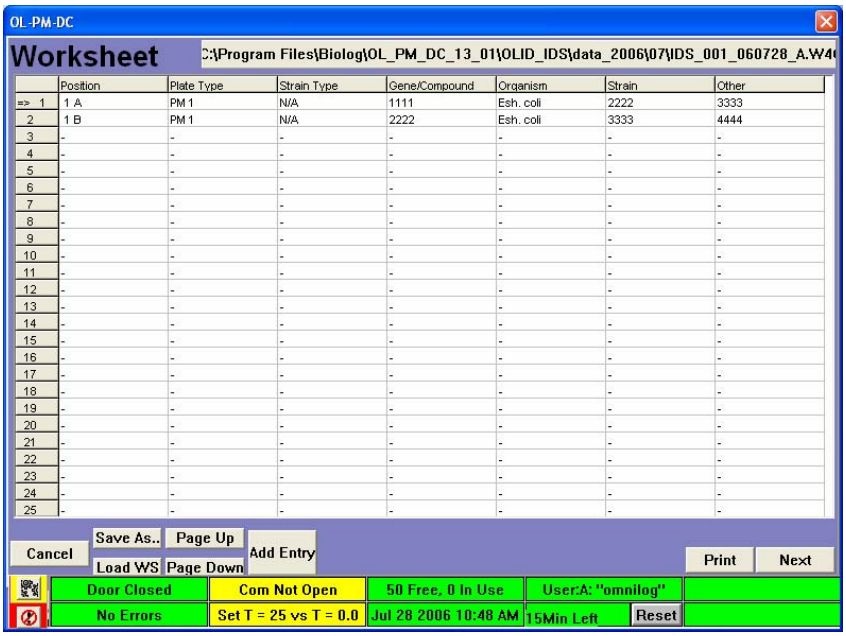


PLATE INFORMATION WINDOW

12. Click **Clear Info** if you wish to clear all entries entered previously.
13. Select a position number by clicking anywhere on the tray stack or click **Next Free** for the next available position. (Confirm choice as required.)
14. Select the correct **Plate Type** (**PM** for PM Plates, **PMM** for PM-Mammalian Plates and **Other** for experimental plates).
15. Select the correct **PM#** (Plate number, for example **1** for PM 1 Plate).

You can edit a worksheet while you are working on it by clicking on the position number of the entry you wish to edit.

16. Select the **Rev** letter (for example A for PM-M1A Plates as applicable).
17. The following fields are general information fields:
    1. **Gene/ Compound** :
    2. **Organism**:
    3. **Strain**:
    4. **Other**:
18. Click one of the following, depending on what you want to do:
    - Click **Clear Info** to clear the values you just typed in
    - Click **Next Free** to assign the next free tray position
    - Click **Delete** to delete the position entry
    - Click **Save Entry** to log the entry into the worksheet
    - Click **Print Worksheet** to print the worksheet
19. Complete all entries for all Plates in the batch. Once you are finished, click **Done** and your current worksheet will appear.



WORKSHEET (WITH ENTRIES)

At this point, it is a good idea to double-check your worksheet for errors. Make sure all required data is entered for each Plate.

Saving Worksheet Entries for Future Use

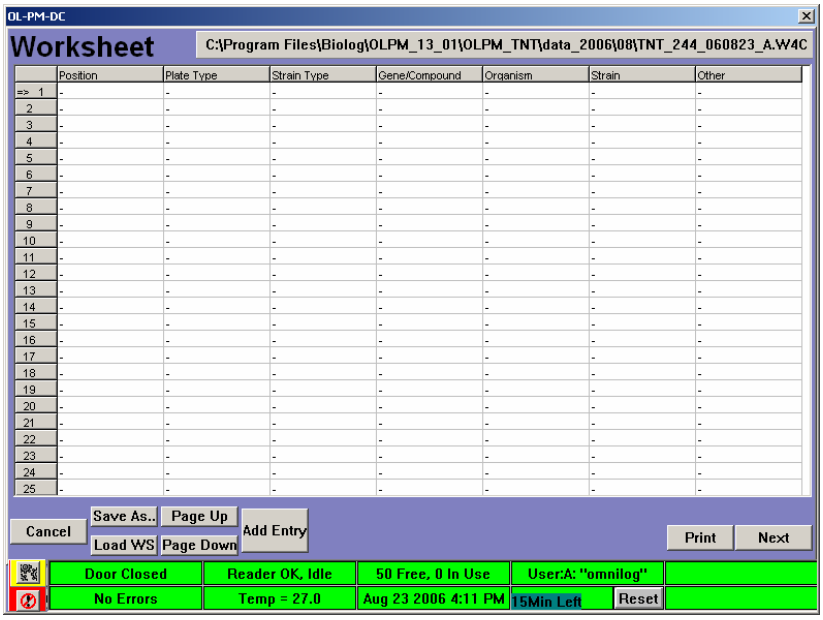
> Note:
> *During the normal loading sequence process, the worksheet file is automatically saved.*
>
> *There is no need to use the **Save As** feature unless you are predetermining worksheet files well in advance of the setup and load process.*
>
> *(Multiple worksheet file names will be formed of the same worksheet during this process. Use the file name of your choice. You must keep track of the positions designated.)*

To Save a worksheet for future access perform the following steps:

1. After making all edit corrections, click on the **Save As** button on the **Worksheet** screen.
2. Select computer location to save the worksheet file. Click **OK**.
3. Click on the **Read** tab.

To Retrieve a saved worksheet perform the following steps:

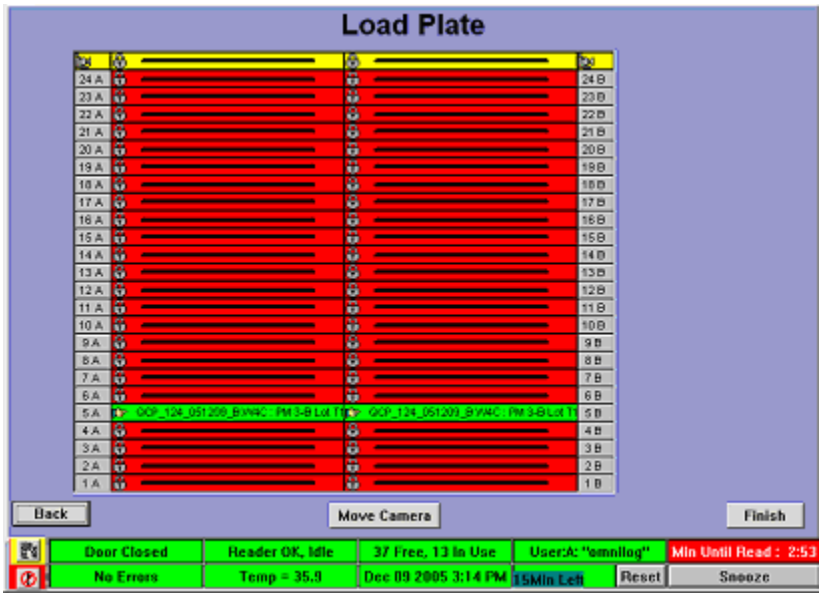
1. Click the **Start Load Sequence** bar at the lower right side of the **Load** window. The **Worksheet Setup** window appears.
2. Click the **Next.** Click **Load WS** button.
3. Search for the worksheet file name and select. Click **OK**. Continue with the following loading instructions.



Loading Plates into the Incubator/Reader

The normal workflow for OmniLog PM DC is to prepare the samples, inoculate the Plates, enter data into the computer, then load the Plates into the incubator/reader. Load using the configuration on the **Load** window to guide you through correct placement of the Plates.

1. After completing the worksheet and printing it out, click **Next** to load the Plates. The **Load Plate** window appears. At this point, you can open the door without causing any error messages.



LOAD PLATE WINDOW

Caution!
Do NOT open the incubator/reader door when the footer bar shows the message "Reader Busy."

2. Check to make sure each Plate is correctly labeled with a unique identifier. Do not write on the side or top of the Plate lid, nor on the Biolog logo. The best place to label the Plate is on the front bottom edge.
3. Load Plates into the incubator/reader according to the rules of thumb in Section 5 page12.
4. As you begin to load each tray, check the position of the camera. If the camera is on the position to be loaded, click **Move Camera**. Follow instructions below.
5. When all Plates and trays are in the proper slots, close the door firmly.
6. Click **Finish** in the lower right corner of the **Load Plate** window. This brings you to the **Read** window.

➔

Remember:

- **Do not take shortcuts when loading Plates. Do not remove more than one tray at a time.**
- **Do not just pull trays out partially to insert Plates.**
- **Do not use trays that have been sitting at room temperature. Trays must be kept at the set temperature of the incubator/reader for accurate incubation.**

RULES OF THUMB FOR LOADING BATCHES

1. Assess Stack Status

Before opening the door, check the Load Plates window, which shows the status of each stack slot.

A or B	⇒	Left (A) or right (B) stack column
Entry in each box	⇒	Gives sample identifiers
Red (with padlock) 	⇒	Slot occupied by Plate not yet read. Do not use.
Green(with hand icon) 	⇒	OK to use this slot

2. Open Door

Open the incubator/reader door.

3. Remove Tray and Insert Plate(s)

- Slide one tray out of its slot.
- Place tray on bench top.
- Insert 1 or 2 Plates into that tray.
  - ⇒ Make sure "Biolog" logo faces front of tray (toward you).
  - ⇒ Make sure A1 well is in right rear corner.
  - ⇒ Make sure Plate fits into slot and all four corners are well seated.
  - ⇒ Make sure Plate lid is securely in place.

4. Replace Tray in Incubator/Reader

Slide the tray back into its exact slot in the incubator/reader.

- ⇒ Make sure you do not put tray into wrong slot.
- ⇒ If you do put tray in the wrong slot, the system will read it and identify it anyway, but the identification will not match that correct sample identifiers. OmniLog PM DC software cannot detect this kind of error. This depends on whether the slot is entered in a worksheet.

5. Repeat for all Panels

- Remove next tray to be loaded.
- Place it on bench top.
- Insert 1 or 2 Plates into that tray.
- Load into incubator/reader.

6. Watch the time!

Do not allow Plates to sit on bench top for more than 20 minutes.

7. Close Door

HOW OFTEN DO READINGS TAKE PLACE?

⇒ OmniLog PM DC reads every 15 minutes
⇒ These intervals occur every 15 clock minutes (at the quarter hour, the half-hour and the quarter to), not 15 minutes from the time you loaded Plates

MOVING THE CAMERA WHEN LOADING MICROPLATES

In the normal course of operation, the camera in the incubator/reader moves from slot to slot as it reads Plates. When not in use, it usually "parks" itself at the top row of the stack (slot 25). Occasionally it will park at slot 1. Wherever it parks, that tray locks into place; you will not be able to remove it for loading. If, for example, if the incubator/reader is empty and you are loading a batch of 50 Plates, you will not be able to remove tray #25 until you move the camera out of the way. Occasionally the camera will move behind a slot while you have that tray out to load Plates. In both cases, you must move the camera out of the way.

➔ If you encounter any difficulty inserting a tray all the way or closing the door because one tray is sticking out, it is most likely because the camera has locked that slot.
➔ DO NOT FORCE TRAYS INTO SLOT.
➔ Simply remove the tray and move the camera out of the way using OmniLog PM DC software.

To move the camera:

1. Remove the tray causing the problem.
2. Close the door.
3. Click **Move Camera** on the **Load Plates** window.

*Note: If you click **Move Camera** before closing the door, you will get an on-screen prompt to close the door.*

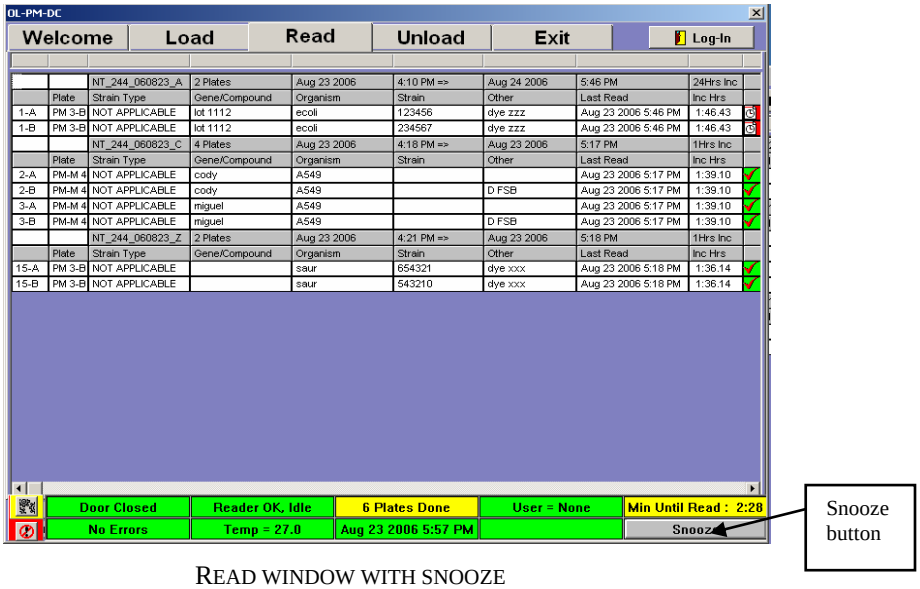
4. The camera will move to another slot. An on-screen message will appear, telling you when it's ok to open the door and resume loading that row.
5. Open the door and load the tray.

Using the Snooze Feature

At times you may wish to gain a few extra minutes before the next reading. If, for example, the incubator/reader door is open and you are still loading and/or unloading Panels, the footer bar (Minutes to Next Read cell) may begin to flash red and yellow. Just below that entry, the Snooze button will appear in grey. In Restricted Mode the Edit privilege is required.

Footer Bar Snooze Button

A Snooze button will appear on the footer bar 5 minutes before the next read. Click the Snooze button to delay the next read by 2 minutes. Use this feature to give more time for loading and unloading Plates.

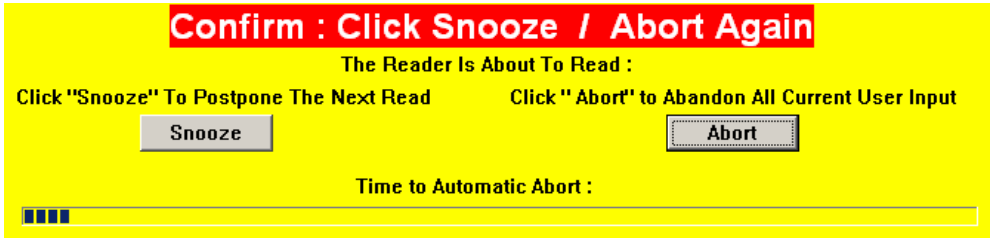


READ WINDOW WITH SNOOZE

Read Warning Dialog Window

The User will be warned 2 minutes before a pending read. Since the software is locked during the read cycle, the warning window permits the user to select snooze to delay the read by 2 minutes or abort to end software use, abandon plate loads until the read cycle is complete.

The OmniLog PM DC read can be delayed 3 times, up to 6 minutes per read cycle.



View Plate Data

As reads are performed as shown on the Read window, you can view more detailed information for the last read cycle. The Plate Data Window shows a picture of the selected plate, along with well-by-well readings and information fields.

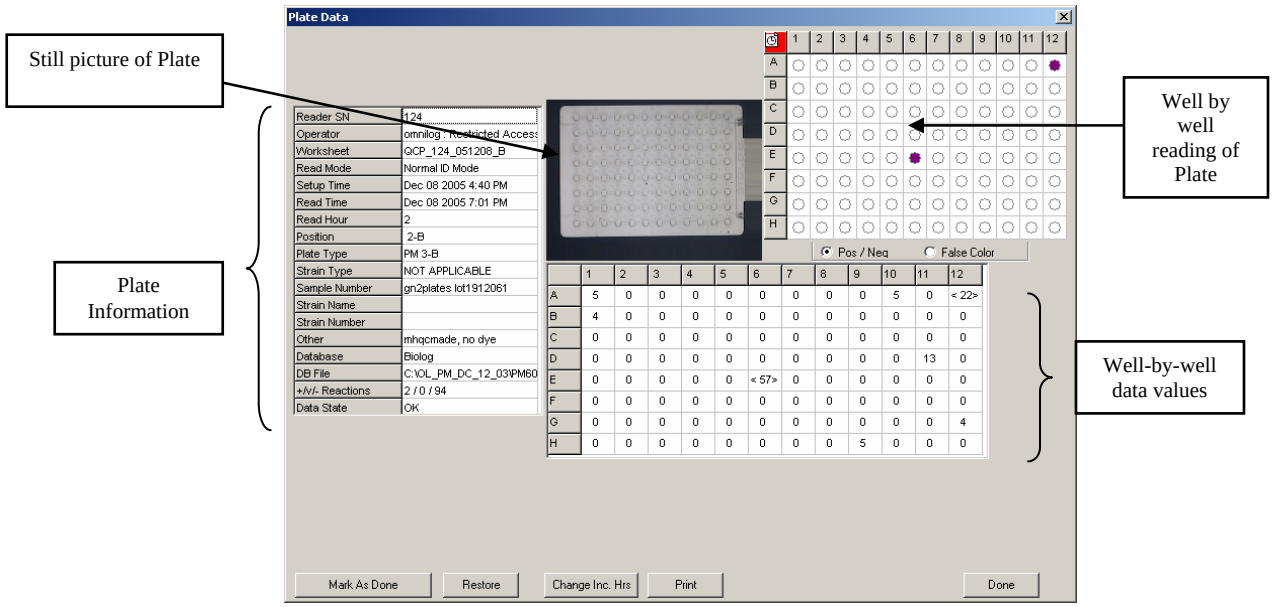


PLATE DATA WINDOW

Data File Management

The worksheet and data files are automatically saved by the OmniLog PM DC software module using the following process:

- File folders are produced for each **Project Code** automatically.
- Within those folders, a folder for each calendar year is produced.
- Within the calendar year folder, other folders are produced for each month.
- The data files are automatically saved in the correct month and year folder for the **Project Code**.

6. OmniLog PM DC Module: Unloading Plates

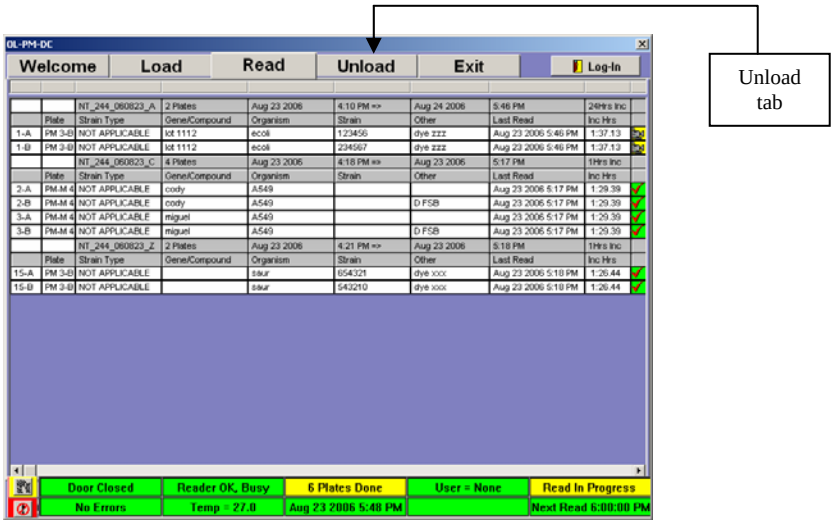
In this section:
➔Checking Unload Status
➔Removing Plates

Removing Plates from the incubator/reader requires only a few easy steps:

- Check the status of all Plates to see which ones are ready to be unloaded
- Make sure that IDs have printed out
- Remove Plates that are ready for unloading
- Check status again

Checking Unload Status

When Plates are ready to be unloaded, the footer bar will let you know by reporting "X Plates Done" (X = the number of Plates finished). During operation, the Read window will be displayed during incubation and reading Plates. The Read window allows you to view the batches and the Plate status.



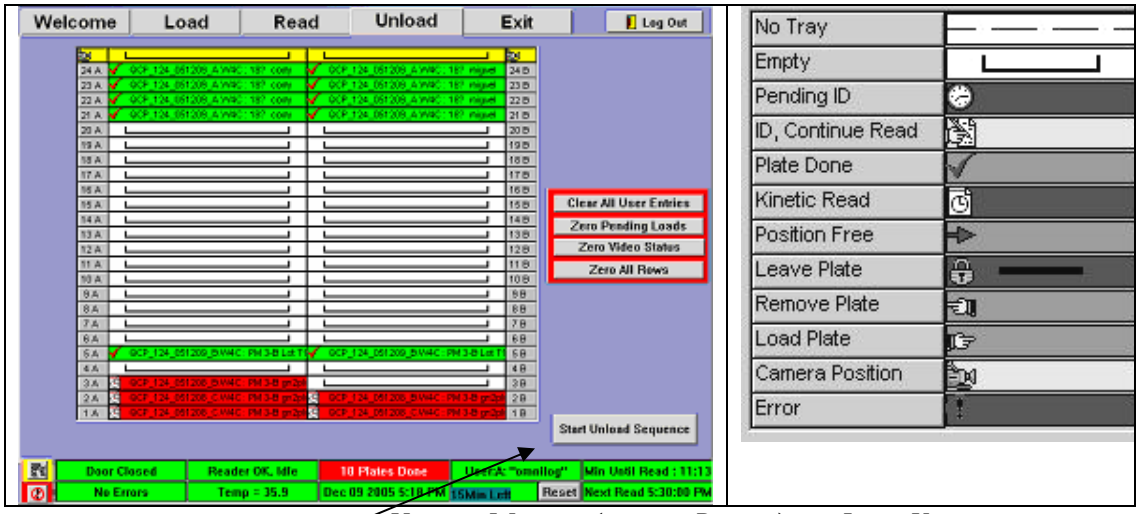
READ WINDOW

Once you open the door, you have 10 minutes to load and unload Plates. If you need more time, activate the Snooze bar.

1. When the **Read** window indicates that some Plates are ready to be unloaded, click **Unload** on the top menu bar. The **Unload** window shows a picture of the tray stack, indicating current status (see Table 6-1 for explanation of symbols). You can click on any row to see the **Unload Key.** Check to ascertain which Plates are ready for removal.

TABLE 6-1: UNLOAD WINDOW SYMBOLS

Key	Explanation
Numbers along left and right edges	Numbers correlate to tray numbers, starting with number 1 at the bottom through number 25 at the top
A and B designations along left and right edges	A = left column of Plates B = right column of Plates
White slots with ----------	Slot empty of both Plates and tray
White slots with [_____]	Slot contains tray, but no Plate
Green background with red checkmark icon	Slots that contain Plates that have been read and are ready to be removed
Yellow background with hand writing icon	Slots containing Plates that have been read but are not ready to be removed. Data still saving.
Red background with clock icon	Slots containing Plates that have not been read yet



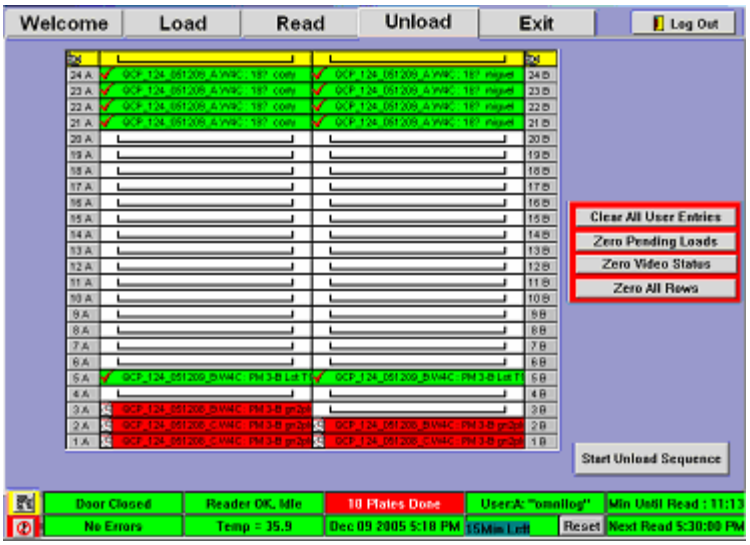
UNLOAD WINDOW (VIEW AS PLATES) AND LOAD KEY

2. Click the **Start Unload Sequence** bar. The **Unload Plates** window appears.

Removing Plates

3. Open the incubator/reader door.
4. Follow the list on the **Unload Plate** window to remove the correct Plates.

Note: The Snooze button can give you more time before the next read. See Section 3 for details.



UNLOAD PLATE SCREEN (PLATES DONE)

5. Remove only one tray at a time. Slide the tray completely out of the incubator/reader.
6. Place the tray on the workbench.
7. Remove the appropriate Plate(s) from the tray.
8. Put the tray back into the same slot in the incubator/reader.
9. If the camera has parked itself into slot behind a tray you wish to remove and you cannot get the tray out, click **Move Camera**. See Section 5 page 13 for details.
10. After you've removed all the desired Plates, close the door.
11. Click **Next** in the lower right corner of the **Unload Plate** window. The software returns you to the **Read** window. This worksheet is no longer active.
12. If you wish to load new Plates while the door is open, complete unloading first. Then load according to instructions in Section 5 page 12. Remember, you have 10 minutes to complete an entire unload/load cycle.

Caution!
It is up to you to remove the correct Plates. The incubator/reader cannot detect if you are removing Plates not listed as "Done" on the Unload Plate window.

Marking Plates As Done

Note: To Mark Plates as Done, Users must have Edit privileges, or Program Administrator Privileges

During normal operation, the Read window will display. As you track the progress of readings, you may occasionally detect, in your judgment, a bad plate.

Rather than proceed with a final reading of that Plate, you can clear it from its worksheet. To clear a Plate record during the read process in Restricted Access mode,

1. Click on the appropriate row in the **Read** window. The **Plate Data** window appears.

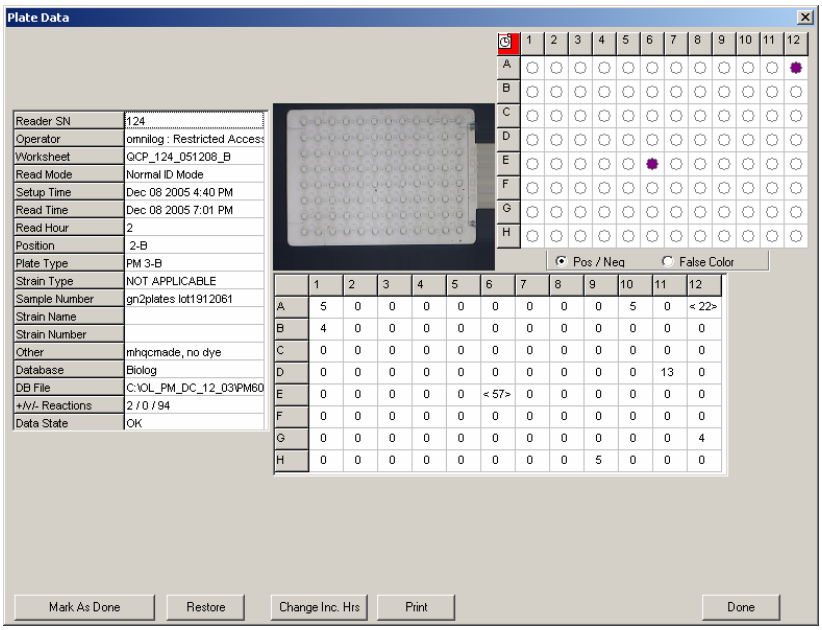


PLATE DATA WINDOW

2. Click Mark as Done. That entry will now be marked as “Done” on the **Read** window listing.

Plates ‘Marked as Done’ by the user can be returned to active data collection by using the Restore Button.

3. To restore the entry, click **Restore**.
4. Click **Done**. The program will return to the **Read** window.

Change Inc. Hrs

The assay duration time can be changed after the data collection has started by using the **Change Inc. Hrs** button.

1. Enter the new time in hours in the target field.
2. The box will turn red.
3. Click Apply to change the incubation time.
4. The box will turn green.
5. Click Done.
6. This must be done to individual plates. There is no batch operation available.

7. OmniLog PM Incubator/Reader: Troubleshooting

Symptom	Cause	Solution
Erratic or inaccurate reading	Moisture, scratches, or smudges on Panel	If using an off-line incubator, wipe bottom of Panel before putting into incubator/reader.
	Debris in wells.	Review the sample preparation procedures for sources of debris.
Software won't communicate with or initialize incubator/reader	Wrong com port selected	Must use Com port 1 on the computer.
	Loose cable connection	Turn incubator/reader off. Unplug cable, then plug it back in. Turn incubator/reader on and try again.
	Unknown cause	The incubator/reader has its own error messages, which should be self-explanatory. Call Biolog Technical Service if you need further assistance.
Panel won't go into incubator/reader	Panel mispositioned	Make sure Panel into place and is seated levelly. Make sure Panel lid is on and is not warped. Remove Panel and reposition in incubator/reader tray. Make sure A1 well is at the right rear. Verify that software is communicating with incubator/reader.
	Camera assembly is in the way	Click **Move Camera** selection bar on the **Load Plate** window to move camera out of the way.
No video signal (footer bar error message "Video Error")	Loose or incorrectly installed cable	Click on the "Video Error" message on the footer bar. If you get a message reading "No Signal", check the video cable at the back of the incubator/reader. The cable should go from a special plug at the back of the computer to the upper plug at the back of the incubator/reader. Call Technical Service.
No video signal (footer bar error message "Video Error")	User is assigned limited Windows privileges	Click on the "Video Error" message on the footer bar. If you do not get a message reading "No Signal", check the Windows privileges assigned to the User.
Specified error message in footer bar	Jam or failure.	Write down the message and call Biolog Technical Services.

Symptom	Cause	Solution
"Not at Temperature" error message in footer bar and "Not at Temp" light in front of instrument goes on	Set and actual temperature out of range (+/- 2°C)	If there is more than a 2°C difference between the temperature you set and the actual temperature of the incubator/reader, this message will appear. This message will appear whenever you reset the temperature and remain in place until the temperature range has been reached. The "Not at Temp" light at the front of the instrument will also illuminate until the temperature range has been reached.
"Interrupt On" light at front of incubator / reader goes on.	You have tried to open the door while the camera assembly is moving.	Shut the door immediately. The incubator/reader will reset. To avoid making this error again, keep an eye on the footer bar for the message "Incubator/reader Moving." When this message shows, do NOT open the door.

8. OmniLog PM DC Module: System Verification

In this section:
➔Checking the Error Logs
➔Using Test Cycle
➔ Field Service Tests
➔ Relocating the OmniLog

OmniLog ID has built-in utilities for testing the accuracy of readings and the functioning of the system. These utilities include:

- Error Logs (what exactly is happening when I get a hardware, video, temperature, or Panel error message?)
- Test Cycle (are the hardware mechanical cycle process and associated video mechanics working correctly?)
- Field Service tests (am I having a hardware error I cannot fix?)
- Relocating the OmniLog (do I need to move the OmniLog to a different location?)

Checking the Error Logs

At times, OmniLog ID may give you an error message. These messages will appear in the lower left-hand section of the footer bar. All errors encountered by the OmniLog are stored in a log file, which you can review. The footer bar will contain a message if any error logs contain errors. To clear these error messages, you must enter the appropriate error log and zero the file.

Note:
Video errors may occur with users who have Limited Windows privilege assigned.

Note: Error messages appear in the footer bar according to a Hardware/Video/Temperature/Plate hierarchy. For instance, if there are current video and Plate errors in the system, the footer bar will show only a "Video Error." Once you've cleared the cause of that error, the footer bar will show "Plate Error."

Table 8.1 shows the types of error message you might receive:

TABLE 8-1: ERROR MESSAGE TYPES

Error Type	Problem This Error Could Cause
Hardware	Incubator/reader may jam
Video	A problem reading a Plate
Temperature	Incubating temperature may have spiked or dropped
Plate	Plate may be missing or left in the incubator/reader

1. From the **Welcome** window, click **Reader Setup**.
2. In the **Error Logs** area, click the error type you wish to view (as listed in the footer bar warning).

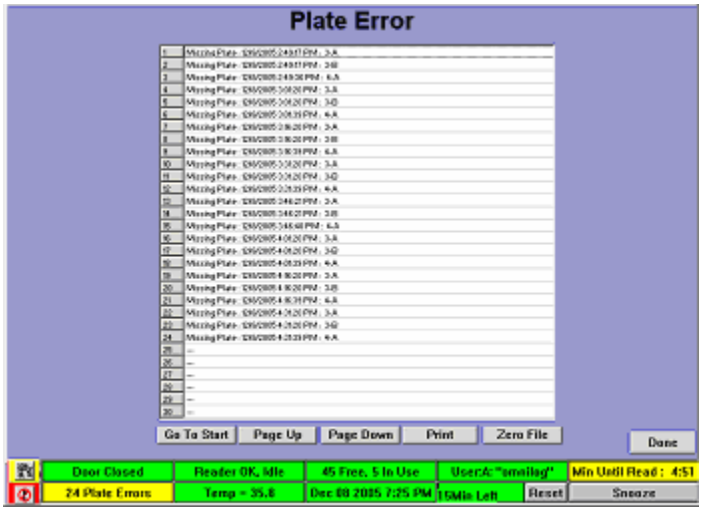


PLATE ERROR WINDOW

3. You can view or manipulate the list as follows:

   Click **Go to Start** to see a description of the first error

   Click **Page Up** to see a description of the previous error

   Click **Page Down** to see a description of the next error

   Click **Print** to print the error list

   Click **Zero File** to delete the list (need Edit privilege)

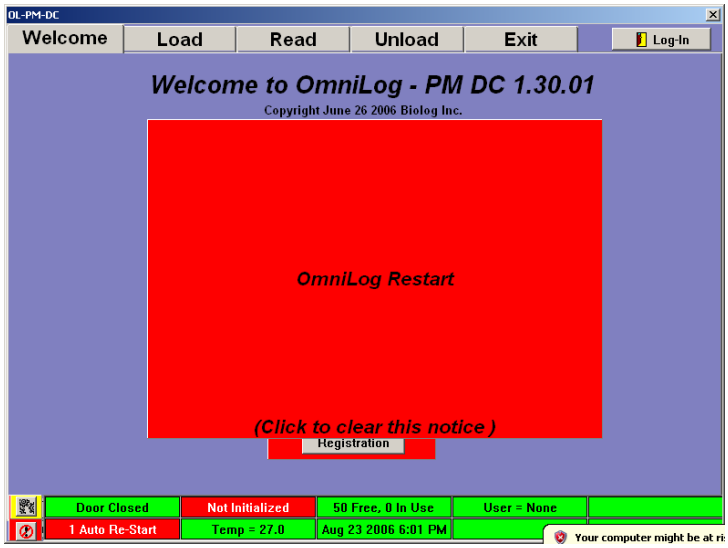
4. Click **Done**. The software will return to the **Reader Setup** window.
5. Click **Done**. The software will return to the **Welcome** window.

Additional Footer Bar Notices

Notice	Meaning
Restart Notice	Power was interrupted to the unit, Restart of Unit performed.
Service Warning	Contact Technical Services, unit may need routine preventative maintenance.

View and clear Notices by following steps 1-5 above .

Clear Auto-Restart Notice

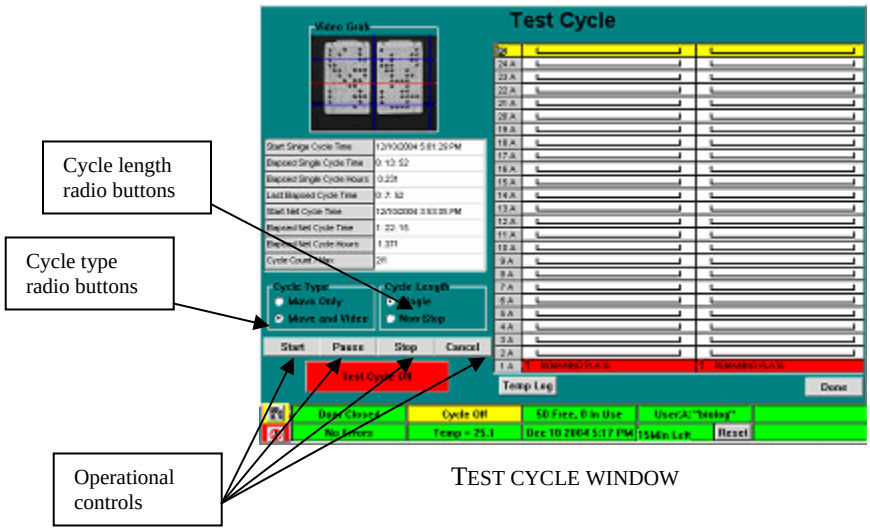


- This Restart Notice appears when an Auto-Restart happens and will appear only on the Welcome Menu, and must be cleared by clicking on it.
- You still will need to clear the Error Log.

Using Test Cycle

The Test Cycle is a method to test the hardware mechanical cycle process and associated video mechanics. You will only use this test to diagnose a hardware failure. *Don't perform this test without the help of Biolog Technical Service.*

1. From the **Welcome** menu, click **Reader** Setup. Make sure the com port is open, the incubator/reader is initialized, and the cycle mode is off.
2. Click **Test Cycle Menu**. The **Test Cycle** window appears.



TEST CYCLE WINDOW

3. In the **Cycle Type** area of the window, select the **Move Only** radio button (to mechanically move the tray only) or the **Move and Video** radio button (mechanically move the tray cycle and capture the cycle on video).
4. In the **Cycle Length** area of the window, select the **Single Cycle** radio button (to perform a single cycle through all trays) or the **Non-Stop** radio button (to cycle repeatedly through all trays).
5. Click **Start** to begin the test cycle process.
6. If desired, click **Pause** to pause the cycle process.
7. Click **Stop** to stop the cycle process.
8. Click **Cancel** to cancel the cycle process (if you want to restart, you must reinitialize the reader).
9. Check **Status** to see if the test is cycling off or on.
10. Click **Done**. The software will return to the **Reader Setup** window.

Please let us assist you in verifying the OmniLog System. Don't do this without the assistance of Biolog Technical Service help.

Read Verification

1. From the **Welcome** window, click **Reader Setup**. Make sure the com port is open, the reader is initialized, and the cycle mode is off.
2. Click **Read Verification** window appears, showing two MicroPlates.
3. Click on the checked box labeled **Auto Lighting** (right top corner of the screen). *The AutoLighting function must be off for system check Read Verification and Test Read. The Auto Lighing function must be turned on in all other cases for normal use.*
4. The **Read Verification** menu can check for four conditions:

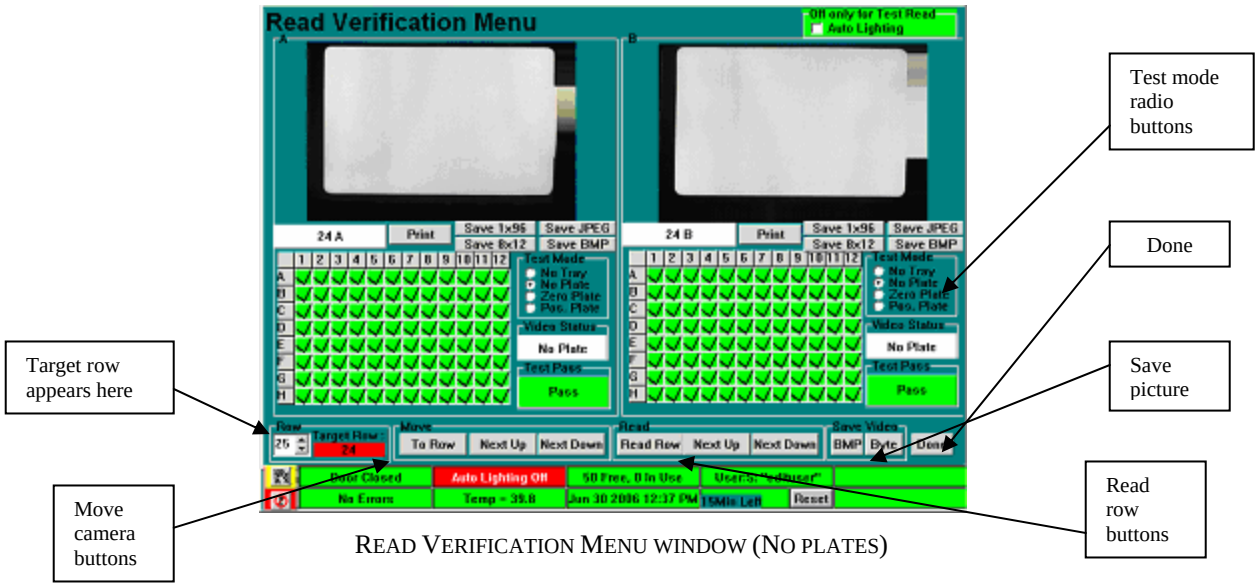
   No Tray

   No Plate

   Zero Plate: All zero value plate (Biolog's OmniLog Verification Kit is required for this test)

   Pos. Plate: All positive plate (Biolog's OmniLog Verification Kit is required for this test)
5. Select a row other than the one where the camera is parked.

Please let us assist you in verifying the OmniLog System. Don't do this without the assistance of Biolog Technical Service help.



READ VERIFICATION MENU WINDOW (NO PLATES)

Remember: Row 1 is at the bottom of the incubator /reader; row 25 is at the top.

*Note: The camera will normally park at the "home" position of row 25. The current parked location of the camera is listed in the lower right of the window ("Target Row"). Move the camera by scrolling the number in the box to the left of the target row up and down. Then click on **To Row** in the **Move** box. You can also move the camera one row up or down from the current row by clicking **Next Up** or **Next Down** in the **Move** box.*

6. Select the desired test. It is best to perform the same test for both MicroPlates in a row. For each of the two MicroPlates, click the desired item in **Test Mode**.

Note: You can change the test mode after a reading.

7. Place MicroPlates correctly, depending on the test you're running, as follows:

   For the **No Tray** test, remove the tray from the desired row

   For the **No Plate** test, have a tray with no MicroPlates in the desired row

   For the **Zero Plate** and **Pos. Plate** tests, have all zero or all positive MicroPlates (as described in the OmniLog Verification Kit instructions) in the desired row and position

8. With the target row set to the correctly-loaded row, click **Read Row**. Wait until the footer bar says that the reader is idle again. The still video image of the two MicroPlates in that row will

appear at the top of the window. The **Video Status** area will show whether the camera detected a tray and MicroPlate. If you selected **No Tray** or **No Plate** test modes, a "pass" entry in **Test Pass** indicated a successful test. The display under the still video image will show a well-by-well pass/fail designation. If a well passes, it will contain a black check mark on a green background. If it fails, it will contain a black X on a red background. In the **Zero Plate** and **Pos. Plate** tests, these designations will show for each well if that well was either zero (for the **Zero Plate** test) or positive (for the **Pos. Plate** test). The **Test Pass** box will show "pass" only if all wells pass the test.

9. Change the target row and click **Read Row** to test other rows (you can also click **Next Up** or **Next Down**.
10. Perform all four tests to fully test the incubator/reader.
11. Click **Print** to print out a report of the Read Verification test for that MicroPlate.
12. Click **Save 1x96** or **Save 8x12** to save the actual data numbers for that MicroPlate to a comma delimited ASCII file. You will be prompted for the name of the file. The first entry in the ASCII file will be the file name (without the directory prefix). The rest of the file will contain the 96 data vales. The **1x96** selection will put all the data on one line. The **8x12** format will put the file name on the first line and the 96 data numbers in an 8-row/12-column format (as in a MicroPlate).
13. Click **Save JPEG** or **Save BMP** to save the original (two MicroPlate) video image to the disk as a .bmp file. You will be prompted for a file name. Normally, you will only do this if Biolog Technical Services requests it in the event of a problem reading MicroPlates.
14. Click on the blank box labeled **Auto Lighting** (right top corner of the screen). *The Auto Lighting box will have a check mark and function is on and ready for normal operations.*
15. Click **Done** to return to **Reader Setup**.

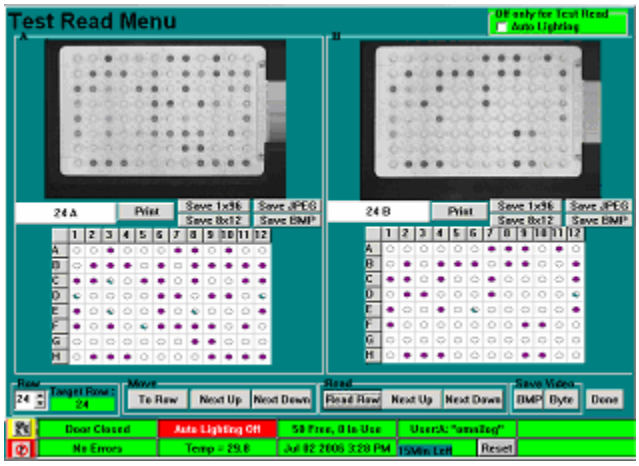
Note: Contact Biolog Technical Support if any Read Verification tests fail.

Using Test Read

Please let us assist you in verifying the OmniLog System. Don't do this without the assistance of Biolog Technical Service help.

Test Read is a method of recording information for analysis to determine if the incubator/reader is reading correctly when using non-standard MicroPlates or conditions. *Don't perform this test without the help of Biolog Technical Service.*

1. From the **Welcome** window, click **Reader Setup**. Make sure the com port is open, the reader is initialized, and the cycle mode is off. Click **Test Read Menu**.



TEST READ WINDOW (2 PLATES)

2. The **Test Read** window is similar to **Read Verification**. The only difference is that instead of reading the MicroPlates versus a test mode, the window displays the numeric values and positive/borderline/negative indicators of the MicroPlates. Use the buttons as described in Section 8, pages 4 thru 6.

Field Service Tests

On the **Welcome** window you'll see a yellow box in the lower half labeled "Field Service Only." The **Print Hardware Status** and **Save Hardware Status** buttons are only to be used by an authorized Biolog Field Service Technician.

In the event of a hardware error, contact Biolog Technical Services.

We may ask you to repeat the error and click the New Button for Hardware Status Menu has been placed on the footer bar, upper left corner.

No normal customer use functional capabilities are on this screen. This is used only on the instruction of Biolog authorized Technical or Field Service Representative to assist in trouble shooting customer problems.
This menu has been improved to contain more information for troubleshooting purposes.
Hardware Status Menu contains 4 tabs:

1. Hardware
2. Video
3. Data
4. Error Logs

At the bottom of each page are 3 buttons:

1. Close – To close the Hardware Status Menu
2. Save as JPEG – to save a JPEG image of the screen to e-mail to Biolog representative.
3. Save as BMP – to save a BMP image of the screen to e-mail to Biolog representative.

Fax or e-mail the complete print-out to Biolog Technical Services.

The **Test Bell** button on the **Reader Setup** window will ring the system bell on the computer once. The bell will ring continuously during a door-open error. This button helps you make sure you can hear the bell.

Relocating the OmniLog

Caution!

Once the OmniLog PM DC system is set up, it's best NOT to move it. If for some reason you must move it, call Biolog Technical Services first, then follow these instructions.

If you physically move the OmniLog Incubator/Reader, you must first park the camera and make sure there's a tray in the bottom row, as follows:

1. On the **Welcome** window, click **Reader Setup**. Make sure the com port is open, the reader is initialized, and the cycle mode is off.
2. Move the camera to the top or bottom of the reader, using the **Move Camera** buttons. The normal resting position for the camera is row 25.
3. Before physically moving the incubator/reader, verify that an empty tray is in Row 1.

Note: It is standard practice to transport the reader with the camera at the top with a tray in the bottom row.

4. Click **Park**.
5. Wait until the footer bar Reader Status cell goes from **Busy** to **Idle**.
6. Quit the OmniLog PM DC software module and turn off the OmniLog computer.
7. It is advisable (for weight considerations) to remove all other trays from the incubator/reader before transporting it. Remember to re-install all trays before using it again.

9. OmniLog PM FM Module: Defining Data Lists and Displaying Kinetic Plots

In this section:
- **➔ OL PM FM Module Software Steps**
- **➔ Populating a Worksheet List**
- **➔ Assembling a Data List**
- **➔ Displaying Kinetic Plots**
- **➔ Averaging Data**
- **➔ Exporting Data**

The File Management/Kinetic Plot module of the OmniLog PM software lets you assemble several Panels of data into a single data list. Using this assembled data, the program displays kinetic plots for every well of a Panel. The program can superimpose replicate plots, thereby allowing you to observe the reproducibility of your data. The data list also serves as the organizational format for the Parametric program.

The data file search feature allows you to select data files according to specific criteria such as organism, strain, gene/compound, Panel type, temperature, project code, etc. This offers a comprehensive, streamlined search, including the ability to evaluate data collected over long periods of time.

DEFINITIONS

Data File
- ⇒ A single file containing all information and data for one Panel
- ⇒ Contains Panel number, inoculum organism, inoculum compound, etc.

Worksheet List:
- ⇒ A worksheet list contains all the files that meet the criteria of your data file search
- ⇒ Each row is a data file for one Panel
- ⇒ Each column corresponds to Panel type, gene/compound, organism, strain, and file name, with an 'other' column for comments

Data List:
- ⇒ A way of organizing data files by relatedness or by membership in a single experiment
- ⇒ Data files from any subset of up to 40 possible numbered Panels
- ⇒ A data list includes averaged data over multiple replicates of a single Panel
- ⇒ Each row represents one Panel type
- ⇒ Each additional column shows an additional replicate for a particular Panel type
- ⇒ Data files in the same row are assumed to be replicates; their data is averaged for reports

FILE NAMING CONVENTIONS

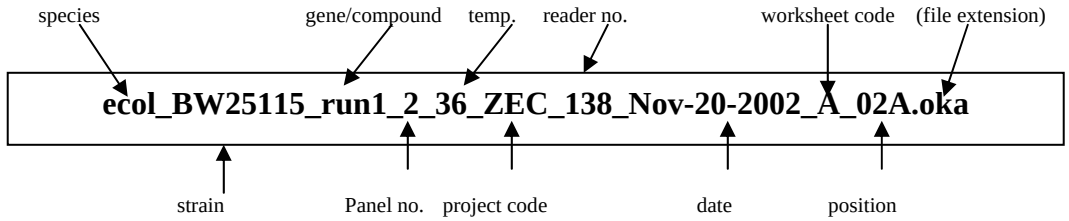
Data files

⇒ Eleven fields separated by underscores

⇒ Fields are: species, strain, gene/compound, other, Panel number, temperature, project code, reader number, date, worksheet code, position

⇒ File extension: .oka (OmniLog kinetic version A)

example:



Data file name limitations

⇒ Species field limited to 4 characters separated by underscore from next field

⇒ Entries that are not letters are replaced by '-'

⇒ Total file name limitation by windows is 60 characters, so the above combination may be truncated.

OMNILOG PM FILE EXTENSIONS

.oka	11-field data file name
.dlb	data list
.w4c	worksheet list
.cvs	comma delimited CSVfile

Note: The following PM system file extensions (.koa, .drb, .pgb) *are generated for analysis processes and should never be moved or deleted.*

OmniLog PM FM Module Software Steps

Step 1

Data Management
Options to populate the OL PM FM Worksheet List

1. Copy all data files for the project in a single folder on your computer for the quick population.

Or

2. Leave data in subfolders and search and select to populate.

Or

3. Select a .W4C file(s) produced by the OLM DC module to populate.

Step 2

Populate Worksheet List Options
(Define Data List tab)

1. Data File Search Dialog
   a. Select field filters
   b. Click **Find Data Files in Selected Directory**
   c. Repeat as necessary

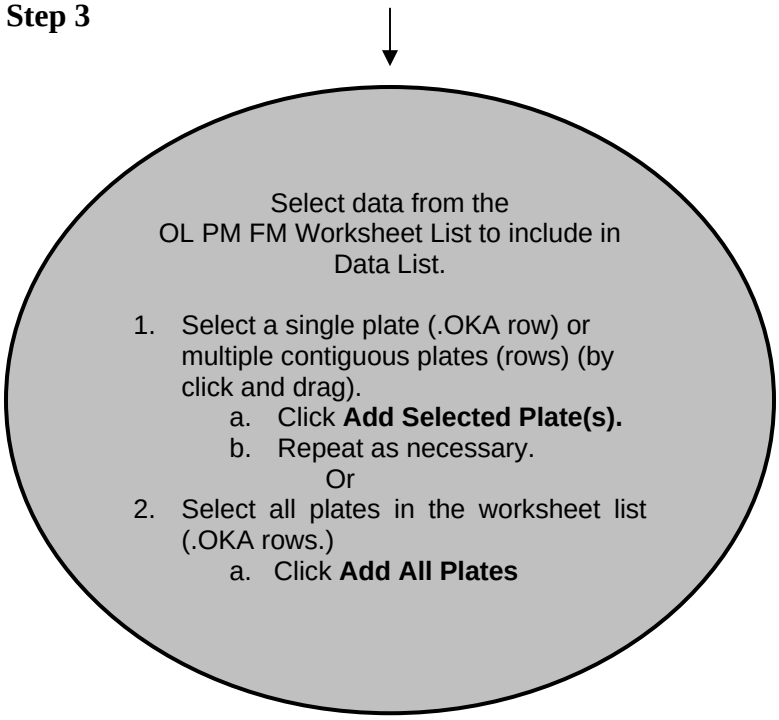
Or

2. **Click here to load Worksheet** field
   a. Select .w4c file
   b. Repeat as necessary

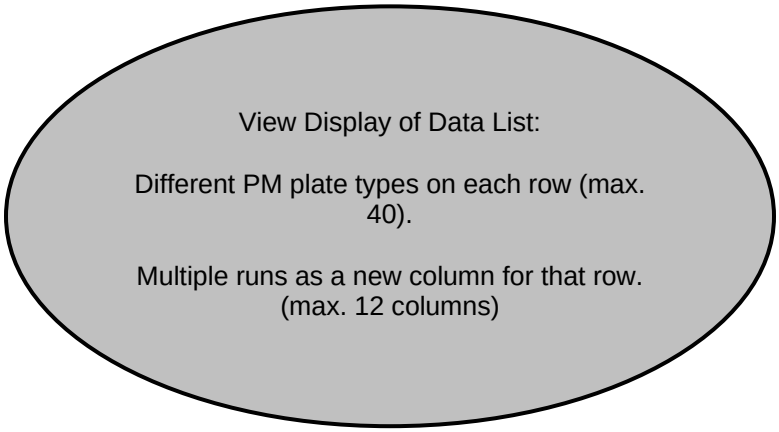
Or

3. Click **Clear All Files** to start over the population process.

Step 3


Select data from the
OL PM FM Worksheet List to include in
Data List.
1. Select a single plate (.OKA row) or multiple contiguous plates (rows) (by click and drag).
a. Click **Add Selected Plate(s).**
b. Repeat as necessary.
Or
2. Select all plates in the worksheet list (.OKA rows.)
a. Click **Add All Plates**

Step 4


View Display of Data List:
Different PM plate types on each row (max. 40).
Multiple runs as a new column for that row. (max. 12 columns)

Step 5

Data List Edit Options

1. Delete Panel Data:
    a. Selection:
        i. Select a single cell or multiple contiguous cells.
        ii. Click **Delete Selected Panels**.
        iii. Repeat as necessary.
    b. All:
        i. Click **Clear All Plates** to restart the Data List selection process again.
2. Add Panel Data:
    a. Refer to Step 2 instructions.

Step 6

Save Kinetic Analysis Data Lists/
Load previously saved Kinetic Analysis Data Lists

1. Calculate average plot of replicates and Save Data List:
    a. Click the **Average Replicates** button.
    b. Click **Save** and name the file (**Windows Save File** dialog).
2. Load Data List:
    a. Click **Load** and select previously saved Data List (.DLB file)
        i. To edit use Step 5 instructions.
        ii. Calculate average plot and **Save** revised Data List.

Step 7

Display Kinetic Plots

1. Select a Panel type row (e.g. PM 1)
    a. Panel Kinetic Plots color selection
        i. Click on the bar at the top of any Data List column.
        ii. Color dialog box appears.
        iii. Click on the desired color for the data kinetic plot.
        iv. Click OK
        v. Repeat as necessary.
2. Select **Kinetic Plot** tab and wait for full plot data view load.

Step 8

Kinetic Plot tab
Panel Replicate View Options

1. Display mode: **Replicates** radio button
    a. **Plate** tab: To change Panel type in view
    b. **Info** tab: view replicate field and color information(changeable)
2. Display mode: **Average** radio button
    a. Average of all Panel type data and ± 1 Std. deviation (change Std. deviation on **Setup** page)
3. Date filter options:
    a. **Min. Day/ Max. Day**
        i. To select span of days
    b. **Max. Value**
        i. To select vertical scale
    c. **Show every Nth read**
        i. To select interval data points
4. Display options:
    a. Select **Set to Different Colors**: view replicates with pre-selected colors (non-selected: black default all replicates)
    b. Select **Show Gridline**: view horizontal and vertical grid
    c. Select **Outline Cells**: view Panel with border of all cells

Step 9

Data manipulations: Setup tab

1. A1 zero: Panel type with A1 negative control well (e.g. PM 1)- To subtract Kinetic data of A1 well from corresponding plate well data.
    a. Select **A1-Zero** box
        i. Click **Define Data List** tab.
        ii. Click **Average Replicates** button
        iii. Click confirmation response
        iv. Click **Save**
        v. Select **Kinetic Plot** tab to view new average
2. Smoothing data
    a. Select **Smooth** box
        i. Click Define Data List tab
        ii. Click Average Replicates button
        iii. Click confirmation response
        iv. Click Save
        v. Select Kinetic Plot tab to view new average

Step 10

Export Data: Export tab

1. Data to Export displayed on Kinetic Plot page grid display
2. Select Export tab
3. Select Output File Name Format
4. Export all replicate data of a single Panel type on the Data List (**Export a Single Plate from Data List 1**)
    a. Single hour data for each replicate
        i. Select **Single Hour** or click **Max Hour** for last read
        ii. Click **Go: Export Single Hour**
    b. All hours data for each replicate
        i. Click **Go: Export All Hours**
5. Export all replicate data of all Panel types on the Data List (**Export All Plates from Data List 1**)
    a. Single hour data for all Panel types each replicate
        i. Select **Single Hour** or click **Max Hour** for last read
        ii. Click **Go: Export Single Hour**
    b. All hours data for all Panel types each replicate
        i. Click **Go: Export All Hours**

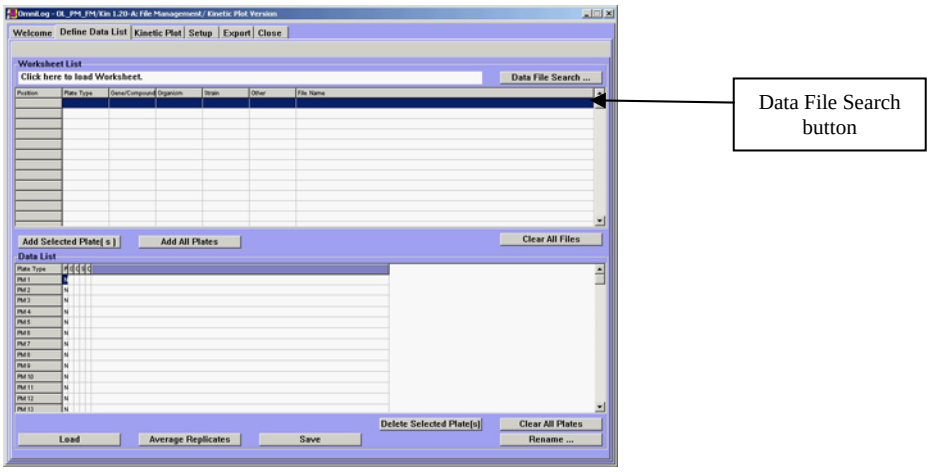
Populating a Worksheet List

Worksheet lists serve two functions:

- to list data files found during a new search
- to retrieve worksheet files created in the Data Collection program and to display them

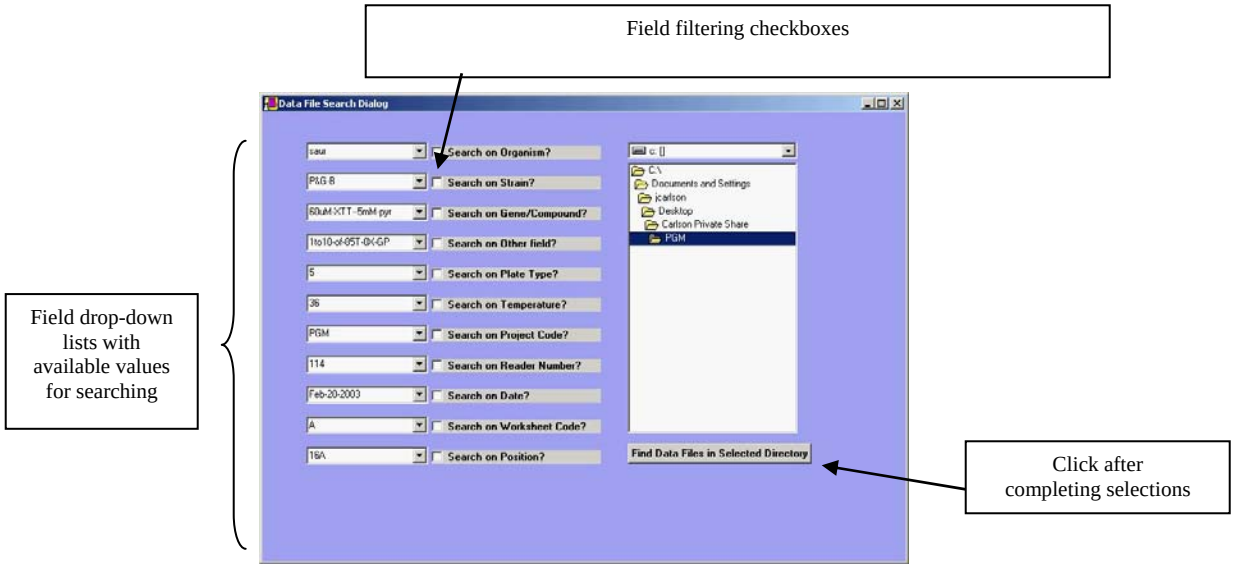
Conducting a new search

1. Click on the **Define Data List** tab on the menu bar.



DEFINE DATA LIST PAGE

2. To search for data files using specific criteria, click on the **Data File Search** button at the far right corner of the page. The **Data File Search Dialog** pops up.



DATA FILE SEARCH DIALOG

3. Use the directory tree on the right to locate the directory containing data files. The window will momentarily flash white as the computer scans the directory for files with the 'oka' extension. The drop-down lists on the left will be populated with all the values found for the 11 fields (these are the same fields used for re-naming the data files.)
4. Check the desired checkboxes to select the fields you want to filter the data files. You can check as many checkboxes as desired; this will narrow the search to only those data files that have matching values for all the selected fields. If you don't check any check boxes, the software will find all data files in the directory you selected.

Note: If you narrow the search too much, you may get a message saying that no files were found; simply remove some of the checkmarks or select a different value for a field and the search may broaden.

Consecutive searches are cumulative in the worksheet list.

5. For each of the fields you've checked, select a value from the corresponding drop-down list on the left. Click on the downward arrows to make each list drop down.
   - You can only select one value from a given drop-down list
   - Searches are cumulative; you can search on one value, then another, thereby locating files that match either value.
   - The results of subsequent searches are added to the bottom of the worksheet list.
6. After you've made the desired selections, click the **Find Data Files in Selected Directory** button. The window will momentarily turn white while the data files are added to the worksheet list. Do not click anything until the original window color returns. Once searching is complete, you'll see the data files listed on the worksheet list.

If subsequent searches find a file that is already on the worksheet list, the program will give you a warning message. Data files are not duplicated in the worksheet list.

7. Conduct as many searches as you like, selecting different fields and/or drop-down values as desired.

*Note: You do not need to close and re-open the **Data File Search Dialog** to perform subsequent searches.*

8. When you are satisfied with your search results as listed in the worksheet list, close the **Data File Search Dialog**. You'll return to the **Define Data List** page with the data files found according to the criteria you selected, in the order you conducted the searches.

Retrieving an pre-existing OL PM DC worksheet file

1. To view a worksheet file you've previously created and saved, click in the box containing the words **Click here to load worksheet** at the top of the **Define Data List** page.

2. A Windows **Open File Dialog** will pop up; select the desired worksheet, then click **Open**.
3. The data files will populate the worksheet list. From here, you can use them to assemble a data list as you would files from a new search.

Assembling a Data List

Populating a worksheet list is an interim step in the process of compiling a data list. Data lists organize the data files for subsequent analysis in the Parametric program. Data lists allow you to:

- save a search
- display kinetic plots
- export files to external programs (such as Excel®)
- use the OmniLog parametric programIf you are satisfied with the data files in the worksheet list on the upper half of the **Define Data List** page, simply click the **Add All Plates** button. The software will copy all the listed data files into the data list on the lower half of the page.

A data list is OmniLog's format for organizing data files. Each data list represents an experiment that consists of a particular group of compounds or strains in one set of media, with a certain number of replicates.

Warning: If you click **Add Plates** multiple times, the software will duplicate the data files in the data list however many times you click.

- The first few (very narrow) columns at the left of the data list contain identifying information. You can expand these columns by clicking on the edge of the colored header at the top of the data list and dragging the column to the right. However, the information in these columns is already displayed in the 11-field file name column. Consequently, you'll most likely only need to expand these columns to view data files named according to a condensed format.

WHAT'S ON A DATA LIST?

Left Column:

⇒ Panel Type (unique identifier assigned to each type of PM Panel, with a defined set of chemicals in 96 wells)

⇒ This column lists a subset of the 40 possible PM Panels types, depending on the Panels used in that experiment

Expanding Columns:

⇒ These five expandable columns list the most common search criteria for the data files

⇒ To view fully, click on the edge of the header and drag the column to the right

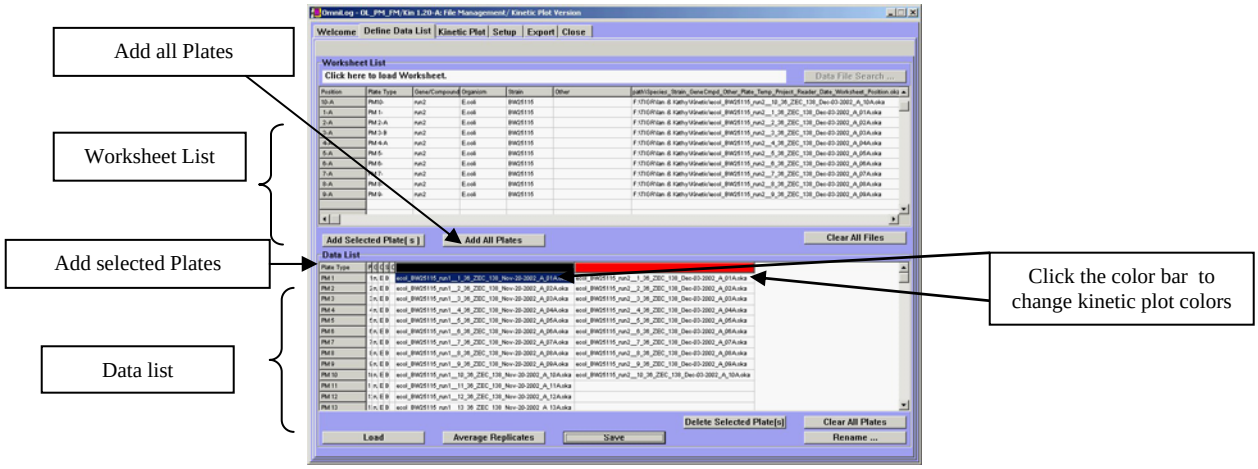
Data File Columns:

⇒ These wide column list the 11-field names of the data files found in your search

⇒ Color of header row matches color of kinetic plot corresponding to that column of data (color can be changed)

⇒ Each column corresponds to an additional replicate for each row that has an additional replicate. Note that a particular row need not have the same number of replicates.

⇒ You can add 119 replicate Panels (when adding a replicate, the program adds a column to the right of the applicable row in the data list, so replicates line up laterally across columns)



DEFINE DATA LIST PAGE, WITH WORKSHEET AND DATA LIST ENTRIES

1. To add some, but not all, worksheet entries to the data list, click and drag or press Shift and the Up or Down arrow keys to select contiguous rows. Once they are highlighted, click the **Add Selected Plates** button in the middle of the page.

*Note: If you want to add non-contiguous Panels, click the **Add Selected Plates** button separately for each contiguous group selected. The groups are added cumulatively to the data list.*

2. To delete Panels from the data list, select the wells you want to delete, then click **Delete Selected Plates**.

3. To clear all entries from the data list (you must do this to begin creating a new data list), click **Clear all Plates**.
4. If you've already created and saved a data list and wish to recall that list, click **Load** at the bottom left of the page. All entries existing at the time you last saved will appear in the data list.
5. If you have added or deleted Panels from the data list, you may want to recalculate the average plot of the replicates. To do so, click **Average Replicates** at the bottom of the page. If you encounter any replicates with a Panel Revision Letter that is different from the first one, a warning will appear. Click **OK** for each warning. A progress bar will show the advancement of the averaging and plotting process.
6. When you are satisfied with the results of your search (as displayed in the data list), click Save to retain the data list for future use and/or parametric analysis. A Windows Save File dialog pops up. Name the data list and click **OK** to save it in the desired directory. The program will automatically append a .dlb file extension to the data list's file name.

Displaying Kinetic Plots

A kinetic plot shows each well in a Panel in a data list. These plots are graphical representations of the data contained in a data list.

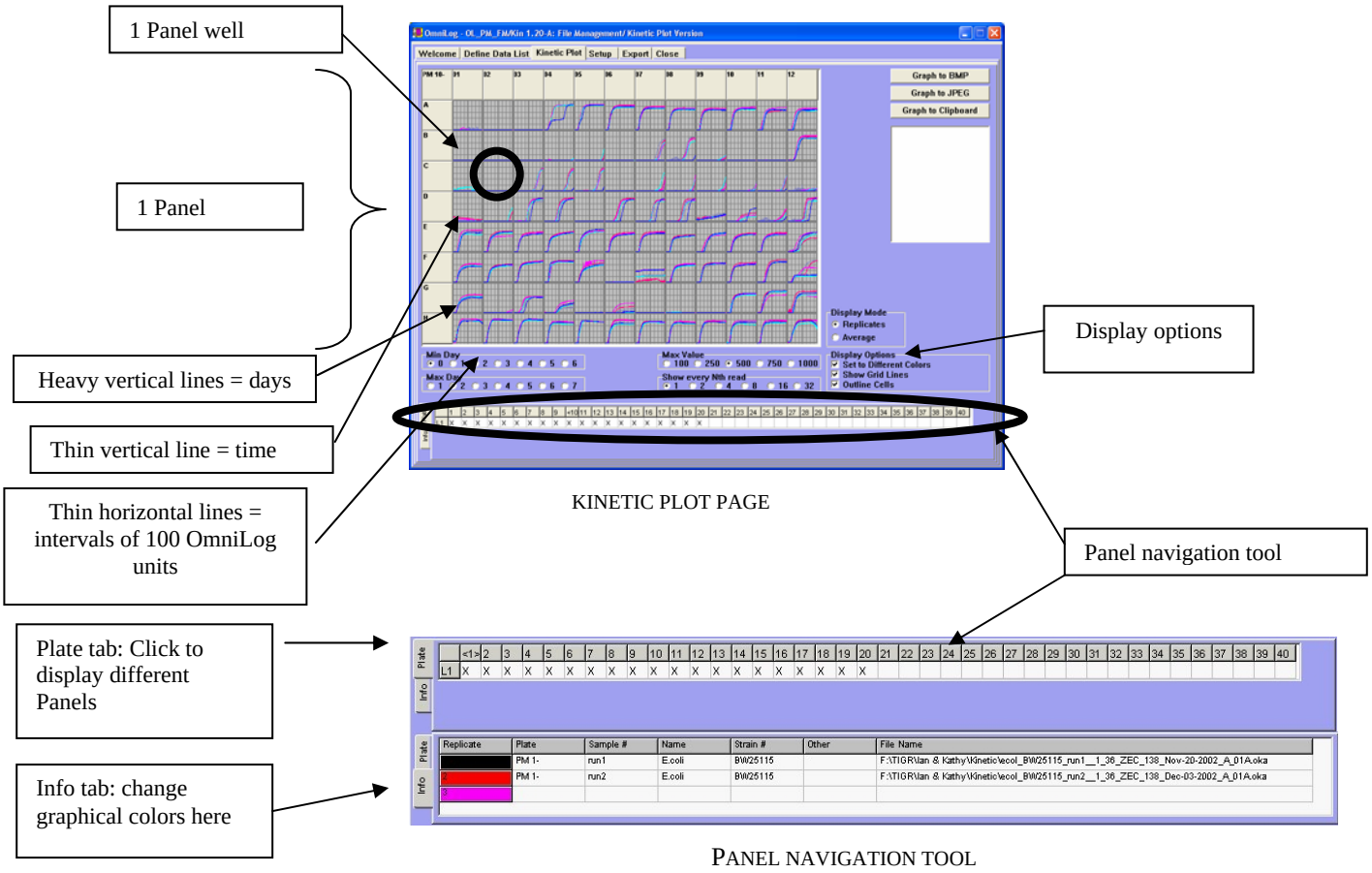
Kinetic plots represent a changes in wells over time. This change reflects a combination of growth and respiration of the test organism.

1 kinetic plot = 1 Panel
1 large black well = 1 well of that Panel
narrow vertical gridlines in wells = markers of time
thick vertical lines in wells = end-of-day markers
colored curved plots = data over time, one color/replicate
horizontal lines in wells = OmniLog Units

1. Before navigating to the kinetic plot page, you can set up the colors you want to appear for each column of data. The color bars at the top of each column in the data list dictate which colors will appear on the kinetic plot page. If you want to change these colors, click on the color bar at the top of each data list column. A **Color** Dialog pops up. Select the desired color by clicking on that color, then click **OK**.

COLOR SELECTION DIALOG

2. Select a Panel type you'd like to begin with in the data list (on the **Define Data List** page) by selecting that row.
3. Click the **Kinetic Plot** tab on the menu bar. The wells will fill with graphical data. Wait until the entire display appears before clicking anything else.
4. Visually scan the display for gross experimental trends:
   - Flat lines indicate no change.
   - Sigmoydal Curves suggest growth and respiration (graphical data).
5. Visually scan the color plots for indications of experimental reproducibility. The display can show up to 10 colors (replicates in excess of 10 are still displayed). The closer those colored lines lay on top of each other, the greater the reproducibility.
6. The software allows you to view graphical data in a number of ways:



KINETIC PLOT PAGE

PANEL NAVIGATION TOOL

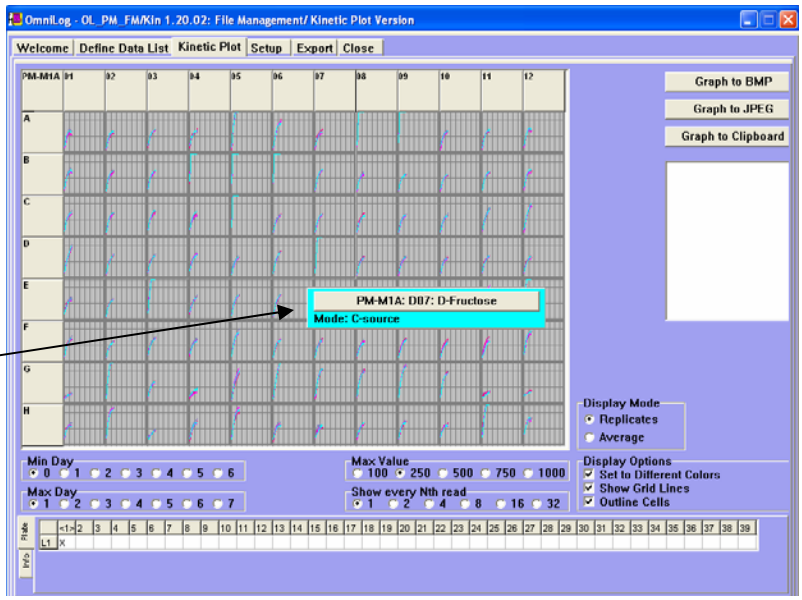
KINETIC PLOT DISPLAY OPTIONS

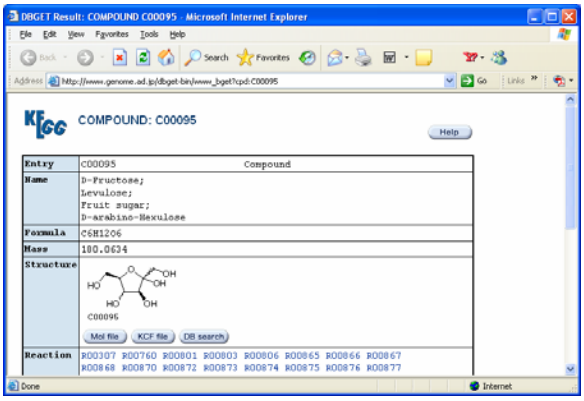
Option	What it does	What to Click
Panel navigation tool	allows you to select which Panel in the current data list you want to view graphically; small carets appear immediately to the left and right of the displayed file.	click on the number of the Panel you want to view (**1-40**)
Min Day/Max Day	allows you to narrow the span of days displayed (for example, if your experiment spanned 7 days, but there was no growth on days 1-3 and excessive growth on days 6 and 7, you can choose to view only days 4-5 if desired)	click the radio button desired for each of **Min Day** and **Max Day**
Max Value	adjusts the vertical scale of the display; you can adjust this value to show the plots on a maximal scale without being out of range	click the desired radio button for **Max Value**

Option	What it does	What to Click
Show Every Nth Read	this adjustment effects the speed at which the display changes; the higher the number you select, the faster the graphical display changes. This occurs because of the elimination of some data points to increase speed.	click the desired radio button for **Show every Nth read**
Set to Different Colors	allows you to display each plate set in a different color.	check the **Set Color** box
Show Grid Lines	allows you to add or remove the horizontal and vertical grid lines within a well	check the **Show Grid Lines** box
Outline Cells	allows you to add or remove the dark outline around each well	check the **Outline Cells** box
Replicate Display Mode	shows the kinetic plots for all the replicate Panels	click on the **Replicates** radio button
Average Display Mode	shows the average kinetic plot and the standard deviation (SD); the average + SD is displayed as shading on the upper edge of the curve, while the average – SD is displayed as shading on the lower edge of the curve.	click on the **Average** radio button

Panel well chemical KEGG link

Click on individual wells to display Panel well chemical and button link to KEGG website information





In order to view these well chemicals, a file is provided for each Panel Type and Series combination of Phenotype MicroArray Panels.

Save of Graph Data

In order to save a screen shot of the Panel graphical grid, select one of the following buttons:

- **Graph to BMP**: Click this to save the Panel grid as a Bitmap file. Select filename and click **Save**.
- **Graph to JPEG**: Click this to save the Panel grid as a JPEG file. Select filename and click **Save**.
- **Graph to Clipboard**: Click this to save the Panel grid onto Clipboard. You may then open another software application and paste the image.

Averaging Data

In order to perform parametric analysis on the data you've collected, you need to average the replicates in your data list. The program does these averages automatically every time you save a data list. You may want to experiment with various settings that the affect this averaging.

To average replicates:

1. Navigate to the **Define Data List** page by clicking on the proper menu tab.
2. Click the **Average Replicates** button at the lower edge of the page. (If the averages have already been calculated by the program, you will see a message indicating this.)
3. Navigate to the **Kinetic Plot** page by clicking on the proper menu tab.
4. Click on the **Average** radio button on the right lower side of the page. The averages will be displayed as a black line in each well.

Warning: Excessive signal in well A1 prevents interpretation of the Panel and the usefulness of the data. A1-zeroing is only for small corrections.

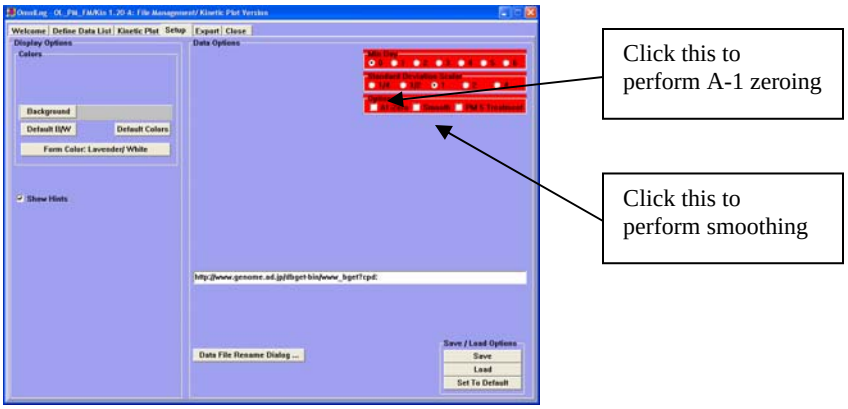
A1-zeroing the data

PM Panels 1-8 have a negative control well (containing no chemical) at the A-1 position. If you have a Panel that you suspect contains a background color in all wells, you may want to subtract the color in A-1 from all wells. This will clear the suspected background color from all wells. In general, you'll do this at the same time you average your data. This treatment is valid only if the background signal is constant over time and observed in all wells.

1. Navigate to the **Setup** page by clicking on the proper menu tab.
2. In the upper right corner, you will see a red box.
3. Check the **A1-Zero** box.
4. Navigate to the **Define Data List** page by clicking on the proper menu tab.
5. Click the **Average Replicates** button.

*Note: Even if your data list does not have more than one replicate, you must click **Average Replicates** in order to A1-Zero the data.*

6. The software will display a message asking if you want to proceed with averaging replicates. Click **Yes** or **No**, as appropriate.
7. Averaging will NOT automatically save your data. Use Save to insure saving your data.



SETUP DISPLAY OPTIONS

Option	What it does	What to Click
Display Options	1) allows you to change the general background color of the Kinetic Plot page Panel grid	click **Background** to select a new background color click **Default B/W** for black and white view only click **Default Colors** for return to default setting color: Grey
	2) allows you to toggle the software module background from Lavender to White and back again.	click **Form Color: Lavender/White** button
Data Options	1) **Min. day**: Do not use. Redundant feature from **Kinetic Plot** screen 2) **Standard Deviation Scalar**: allows you to change the standard deviation displayed for the data average view on the **Kinetic Plot** screen	click the radio button desired for the standard deviation to display
	3) **Options**: make selection for data manipulation processes	click **A1 Zer**o box for recalculation of averages on Panels with A1 negative control wells click **Smooth** box for recalculation of averages for date containing noise click **PM 5 Treatment** for recalculation of averages for use in OL PM PR module PM 5 Panel analysis
Internet Link Field	lists the current web link to the KEGG site	click and modify only if the link to KEGG is revised
Data File Rename Dialog	button not applicable for standard user use	

Option	What it does	What to Click
Save/Load Options	Allows the user to save option settings, they may be retrieved for use in data analysis as necessary	click **Save** to save current modified options settings as a .KOA file (e.g. **Kinetic Plot** tab: Max. Value, Show Gridlines) (e.g. **Setup** tab: **Display Options: Colors** and **Data Options: Standard Deviation Scalar**) click **Load** to load a saved options setting click **Set To Default** to return to original settings

Smoothing the Data

A kinetic plot may have noise. If desired, you can smooth out the data. The Smooth function of the software recalculates each OmniLog Signal value for each read as a weighted average of two consecutive reads. This results in a smoother plot, which makes plot comparison easier (between replicates, for example). This selection is a matter of personal preference. In general, you'll do this at the same time you average your data.

Note: Smoothing data influences parametric analysis results.

1. On the **Setup** page, click the **Smooth** radio button in the upper right corner of the page.
2. Navigate to the **Define Data List** page by clicking the proper menu tab.
3. Click the **Average Replicates** button.

*Note: Even if your data list does not have more than one replicate, you must click **Average Replicates** in order to smooth the data.*

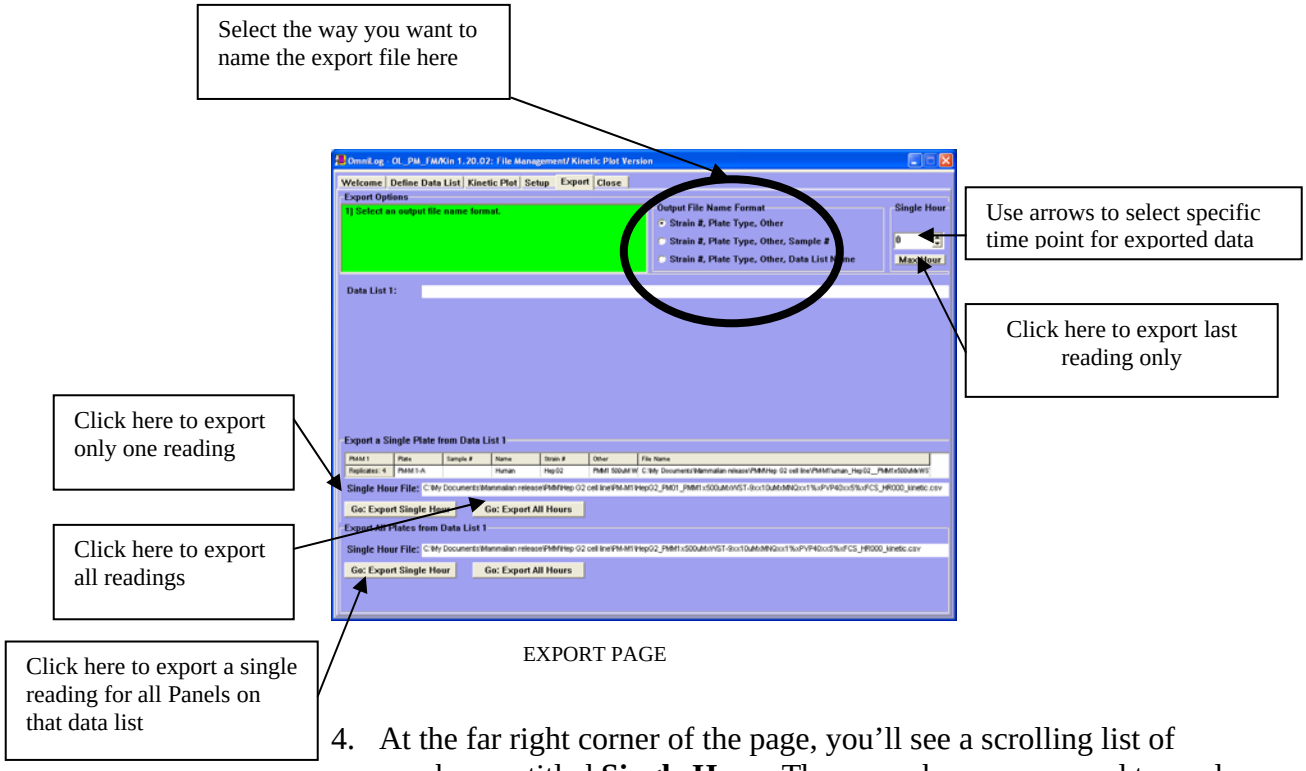
4. You will see a message reminding you that you have selected a non-default option.

Exporting Data

OmniLog PM software allows you to export large quantities of data from kinetic plots to an external program such as Excel. The raw data is exported in units of OmniLog Signal.

1. Make sure the data you want to export is displayed on-screen in the kinetic plot. Check the Panel navigation tool across the bottom of the page to make sure the desired Panel is shown; you'll see small carets on either side of the selected Panel number (such as <7>).
2. Click the **Export** tab on the menu bar.

3. The upper right side of the page contains three radio buttons that allow you to select a naming format for the export file. This information is selected from the 11-field data file name for the first replicate of the selected Panel. Select the desired format by clicking on the proper radio button. As you click each one, you'll see changes in the export file name listed in the **Single Hour File** display box.



EXPORT PAGE

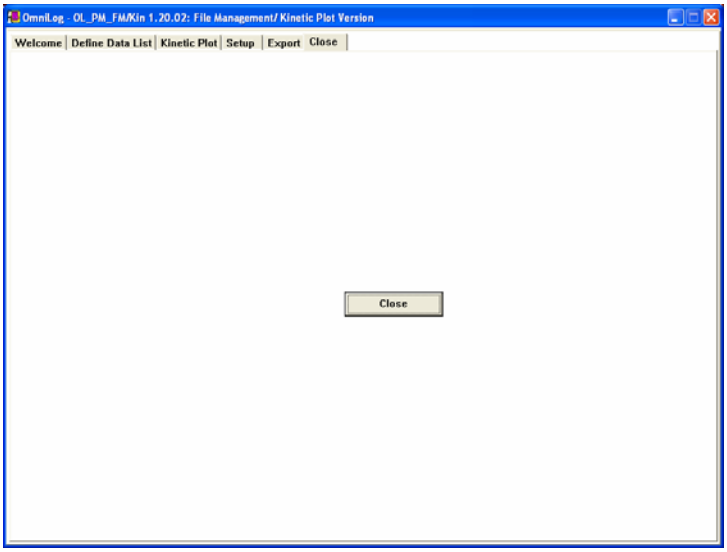
4. At the far right corner of the page, you'll see a scrolling list of numbers entitled **Single Hour**. These numbers correspond to read times during the experiment. This allows you to export OmniLog Signal values for specific time points (including an end-point reading). Click the **Up** and **Down** arrows to select the desired time point. Click the **Max Hour** button if you want to export only the last reading.
5. Observe the **Data List 1** field. If you've saved the data list, the name will appear here; if not, this field will be empty. You can export the data whether you've saved the data list or not.
6. To export data for the hour you selected in the upper right corner, click **Go: Export Single Hour**.
7. To export data for all hours in the displayed Panel, click **Go: Export All Hours**.
8. The bottom section of the Export page **(Export All Plates from Data List 1)** allows you to export data for all Panels in the data list you are currently working with.

- Click **Go: Export Single Hour** (the one on the bottom of the page) to export the data for the hour selected in the upper right corner (but for all Panels in the current data list).
- Click **Go: Export All Hours** (the one on the bottom of the page) to export all values over the entire experiment (for all Panels in the current data list).

9. A progress bar and a message to "Please Wait" will appear while the data is exported.
10. To locate the exported data, open Excel and find the file as it is named in the Single Hour File display box. All OmniLog Signal values for the selected readings will appear on a spreadsheet.
11. Click the Close tab on the menu bar when you've finished. Click Close again to exit the program.

Close OL PM FM Software Module

1. Click the **Close** tab.
2. Click the **Close** button.



CLOSE WINDOW

10. OmniLog PM PAR Module: Comparing Data Lists and Generating Reports

In this section:
- **Comparing Data Lists**
- **Saving Graphical Displays and Viewing Saved Files**
- **Generating Non-Graphical Reports**
- **Exporting Parameter Values**

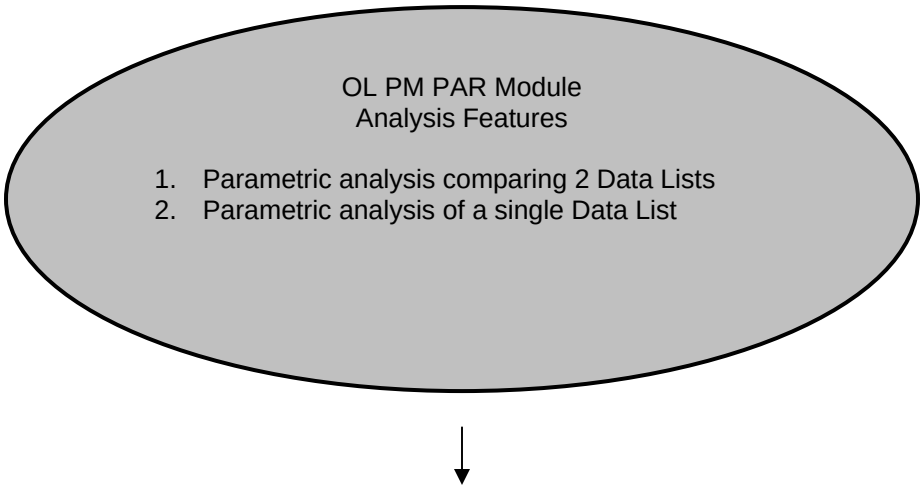
The Parametric portion of the OmniLog PM software displays a comparison of the data in two data lists. The program superimposes two kinetic plots, allowing you to identify anomalous wells easily. This is useful for comparing a compound-treated organism with a reference organism. You can also compare the mutant form of an organism with the wild type of that organism. The contrasting colors used for the superimposed curves visually guide you in identifying wells of interest.

Once you've displayed meaningful visual data, you can save it and generate reports. These reports include graphical summaries of data (kinetic plots) exportable into Word or Power Point® documents, as well as non-graphical data summaries you can export into Excel or Access.

The Parametric module also has the capability to perform parametric analysis on a single Data List. Load the Data List in the Test section.

OmniLog PM PAR Module Software Steps

Step 1



Step 2

Data Management
Populate the OL PM PAR Data List Set

1. Using the OL PM FM module, make at least 2 different Data List of data that you wish to compare.
    a. Test data list (to view only one data list-enter here)
    b. Reference data list
2. Select the **Define Data List** tab and select the **Define Data Set** sub-tab.
    a. Click **Click here to load Data List 1** field to select the test data list. Click **Open**.
        i. Click **Clear 1** to clear the selection and reselect as needed
    b. Click **Click here to load Data List 2** field to select the reference data list. Click **Open**.
        i. Click **Clear 2** to clear the selection and reselect as needed

Step 3

Additional **Define Data Set** tab Options

1. Click **Save Data Set** to save the selected test and reference Data Lists for future use.
    a. Select filename, click **OK**.
2. Narrow data to display on **List Status** section
    a. Select **Fixed Selection Mode** radio button
        i. Click **GN** to display PM 1–20 Panels
        ii. Click **GP** to display PM 1-10 and 31-40 Panels
        iii. Click **YT** to display PM 1-10 and 21-30
        iv. Click **User** to display Data List Panels
    b. View **List Status** Panel(s) display option based on above choice:
        i. **L1**: Every panel type in the **Test** data list
        ii. **L2** : Every panel type in the **Ref** data list
        iii. **L1 & L2**: only panel types contained in both data lists
        iv. **S**: only panel selections in **Fixed Selection Mode**
        v. **20**: only panels common to **Test** Data List, **Ref** Data List and **Fixed Selection Mode** criteria

Step 4

Data View Options

1. Multiple panel display
    a. Select 20 Plate Data sub-tab
2. Single panel display
    a. Select 1 Plate Data sub-tab

Step 5

Parameter Comparison Selection
Options For the Data viewed on **1 Plate Data** and
20 Plate Data pages

4. Make selections on the **1 Plate Data** page
    a. Hour range of view:
        i. Select Min Hour
        ii. Select Max Hour
    b. Select Max Value radio button (OmniLog units)
    c. Select Parameter radio button (**Commonly selected**; *Experimental*)
        i. **Height: average height (area/# of reads)**
        ii. *Lag: lag time*
        iii. *Max: maximum height*
        iv. *Min: minimum height*
        v. *Slope*
        vi. *Mid: mid time*
        vii. *Stop: Plateau time*
        viii. *None*
        ix. **Area: sum of all OL values (all timepoints)**
        x. **Inflection: time of equal area under derivative curve on both sides**
        xi. *Max Slope: maximum slope time*
        xii. *Area/Inf: Inflection time/last OL value*
5. Numeric value of Parameter choice viewed in each well above plots.
6. *Experimental selections: select prior to parameter selection (default value)*
    a. IC50: Do not use
    b. Max/Spread: use to disqualify plots with flat 1st derivative curve (1.6)
    c. 1st Derivative Win: use to modify Inflection, Max Slope and Area/Inf parameters (10)
    d. Mono Inc: next value = (>value – Mono Inc); sets sequential value filter (-1000)

Step 6

1 Plate Data page Display Choices
(Applies to 20 Plate Data also)

1. Display Mode Selection
   a. **List 1 vs 2**: view comparison
   b. **List 1**: view test
   c. **List 2**: view reference
2. Display Options:
   a. **Plate Parameters**: view parametric plot *(see pg 12)*
   b. **Outline Differences >= Limit** *(based on **Setup** tab; **Data Options**)*
3. Choose **1 Plate Data** Panel type to view
   a. Click on the column heading on any Panel navigation tool display
4. Export
   a. Export individual Plate well data for List 1 only.

Step 7

Setup tab Data Options section

1. **2-Plate Data Confidence Limits** selections
   a. Do Not Use
   b. Use Percent Value
   c. Use Delta Value
   d. Use Pcnt, >= Delta
2. **2-Plate Time Confidence Limits** selections
   a. Click **Use Time Confidence Limit**
      i. Select **the # 15 min Reads**
      ii. Calculate average plot and **Save** revised Data List.
3. **Options**
   a. Click **Smooth** Smoothing data
      i. Click Define Data List tab
      ii. Click Parameter radio button to apply
3. Parameter tab Options
   a. Click one of the Parameter tabs
   b. Select the **Metabolic Distance Limit (#'s 1-8);** use for Panel types 1 thru 8
      i. Press Enter key to apply
   c. Select the **Sensitivity Distance Limit (#'s 9-40);** use for Panel types 9 thru 40
      i. Press Enter key to apply

Step 8

Setup tab Display Options

1. **Colors** section
    a. Click on the Bar and select a color, click **OK**
        i. **Plate 1 (Test)** (default green)
        ii. **Plate 2 (Ref)** (default red)
        iii. **Both** (default yellow)
        iv. **Background** (default grey)
    b. Click **Default B/W** to change graph display all to black and white
    c. Click **Default Colors** to change graph display to defaults
    d. Click **Form Color: Lavender/White** to toggle from default module background lavender to white and back
    e. Click the following to apply the graph display feature
        i. Select **Show Gridline**: view horizontal and vertical grid
        ii. Select **Outline Cells**: view Panel with border of all cells

Step 9

Difference selection:
Custom **Outline Differences**

1. Differences are outlined based on the Setup limits you applied. *(Note: Outline Differences must be selected. White outline.)*
2. On the **20 Plate Data** tab view the following custom outline selection features can be performed.
    a. Click on any well to select or deselect (also possible on the **1 Plate Data** page). *Grey outline*
    b. Click **Clear Picks** to return to original differences outlined based on the Setup limits.
    c. Select **Just User**, if you do not want the computer detected differences. Only your selections will apply with the click of the **Computer →User** button.
    d. Click **Pick All** to select all wells.
    e. After completing your selections, click Computer →User to finalize the choice. White/Grey outline will change to Black.

Step 10

Export Data: **Export** tab

1. **Export List 1 vs List 2 Well distances** (difference) values to Excel CSV file.
   a. Click **Go: Export Distances**
2. **Export a Single Plate from Data List 1** *(in view on **1 Plate Data** page)* to a Excel CSV file.
   a. Click **Go: Export Parameters**
3. **Export All Plate from Data List 1**
   a. Click **Go: Export Parameters** to export as a CSV file.
   b. Click **Go: Export to XLS** to export as a multi-spreadsheet, multi-formatted Excel spreadsheet XLS file.

Step 11

Report tab

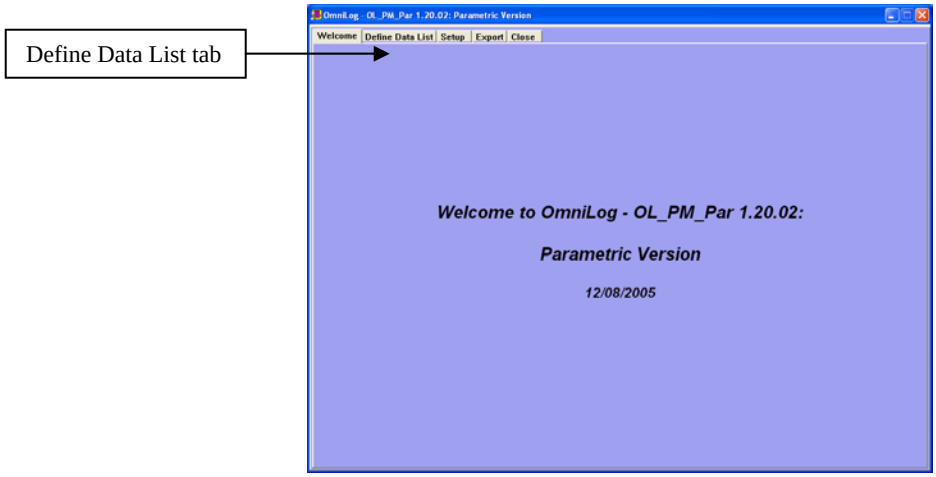
1. Well outline selections made can be exported as a report
   a. Make outline selections
   b. Select the **Report** tab
   c. View the entries for the report
   d. Click **Export Report** button.

Comparing Data Lists

Once you've created at least two data lists using the File Management/Kinetic Plot portion of the software, you will open the Parametric program and begin the process of creating a visual display that best serves your experimental purposes.

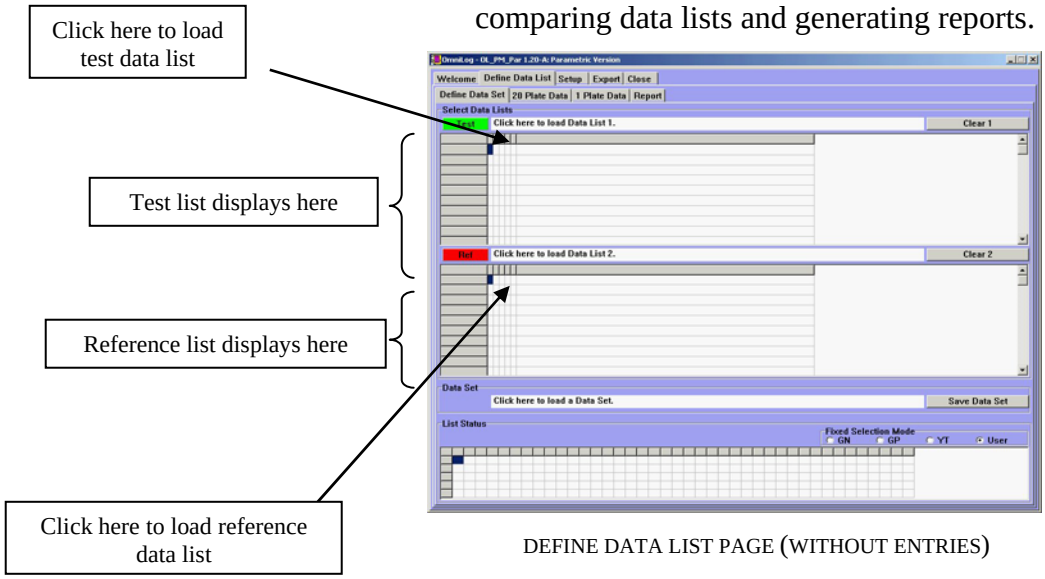
Retrieving test and reference data lists

1. Double-click on the OL_PR_12.exe icon in the proper OmniLog PM folder. A **Welcome** page appears, displaying the program name, version, and date.



WELCOME PAGE (PARAMETRIC PROGRAM)

2. Click the **Define Data Lists** tab on the menu bar. The page that appears has additional tabs you'll use during the process of comparing data lists and generating reports.



DEFINE DATA LIST PAGE (WITHOUT ENTRIES)

3. Click in the **Click here to load Data List 1** white box at the top of the page (adjacent to the green box) to load the test data list (this will serve as the test list for this data set).
4. Navigate through the directories until you find the desired data list; highlight the name and it will appear in the **File Name** box. These files have a .dlb extension.
5. Click **Open**.

Note: Check data file names carefully. Make sure you retrieve the proper data files in the upper half of the page and the proper data files in the lower part of the page. If you load a reference file on the top and a test file on the bottom, the mathematical calculations will be incorrect.

6. The program will automatically calculate the parameters and populate the upper half of the page with the retrieved data list. Allow a few moments for this to occur.
7. Click in the **Click here to load Data List 2** white box in the middle of the page (adjacent to the red box) to load the reference data list (this will serve as the reference list for this data set).

Navigate through the directories until you find the desired data list; select the name and it will appear in the **File Name** box of the Open File Dialog. These files have a .dlb extension.

8. Click **Open**.
9. The program will automatically calculate the parameters and populate the lower half of the page with the retrieved data list. Allow a few moments for this to occur.

Note: The columns that appear on the test and reference data lists are the same as those that appeared in the data list grid created using the Kinetic module of the program.

WHAT'S ON THE DISPLAYED DATA LISTS?

Panel Type (Left Column):

⇒ Panel Type (unique identifier assigned to each kind of PM Panel, depending on the chemicals contained in all of the 96 wells)

⇒ This column lists a subset of the 40 possible PM Panel types, depending on the Panels used in that experiment

Color Bars:

⇒ Green **Test** bar in upper section denotes data list for test (mutant) form of organism

⇒ Red **Ref** bar in upper section denotes data list for reference (wild-type) form of organism

Expanding Columns:

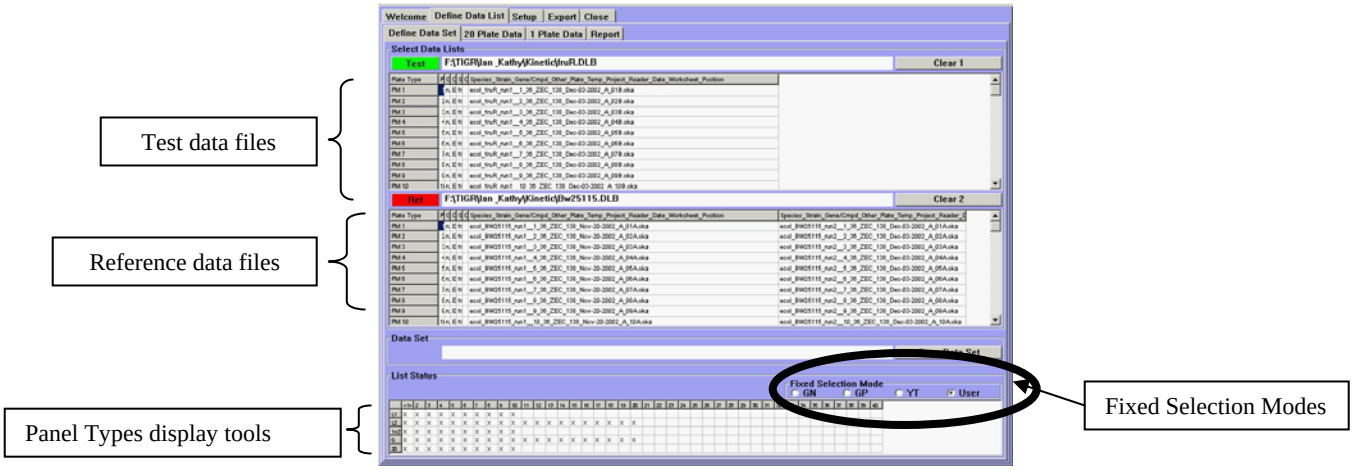
⇒ These five expandable columns list the most common search criteria for Panels (position, sample number, strain name, strain number, and other)

⇒ To view fully, click on the edge of the header row and drag column to right

Data File Columns:

⇒ These wide columns list the 11-field names of the files you created in the data list

⇒ Each additional column represents an additional replicate if that Panel has an additional replicate



DEFINE DATA LISTS PAGE (WITH TEST AND REFERENCE LISTS)

Narrowing down the types of Panels displayed

1. Once both data lists (test and reference) are displayed, use the Panel Types display tools at the bottom of the page to define the types of Panels you want to compare.
    - In the **Fixed Selection Mode** groupbox, click **GN** (gram negative) to display Panels PM 1-20

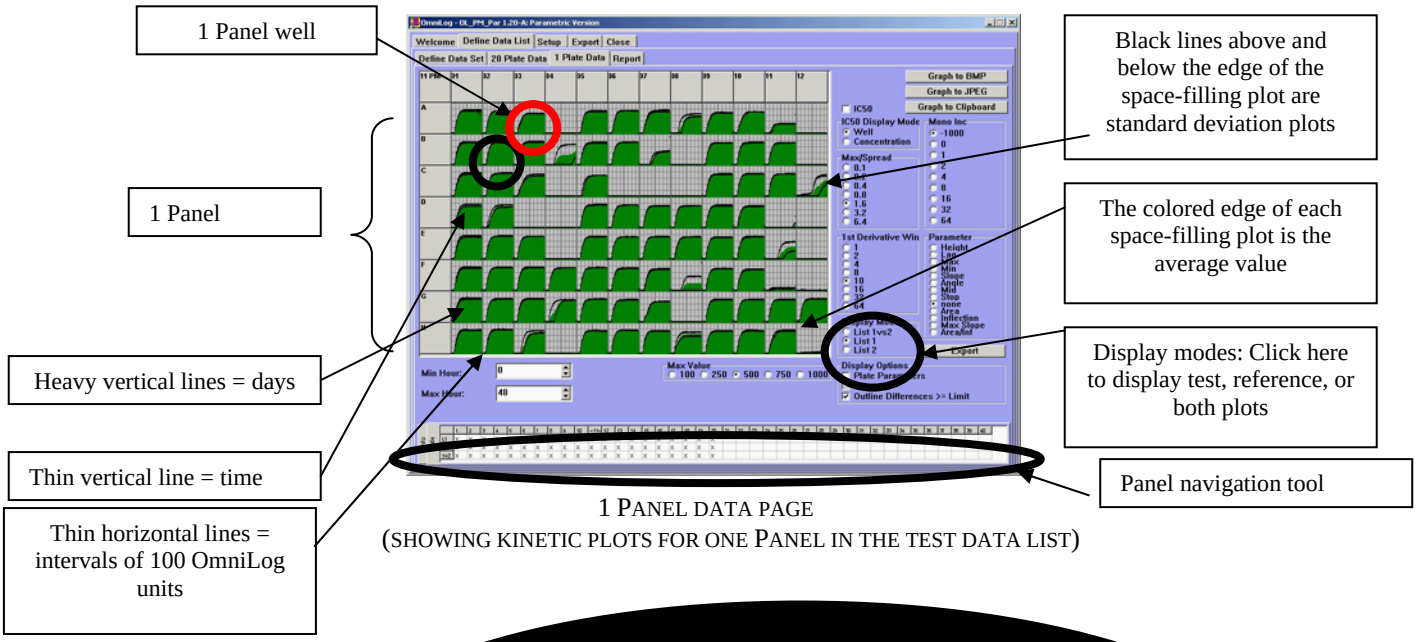
- In the **Fixed Selection Mode** groupbox, click **GP** (gram positive) to display Panels PM 1-10 and 31-40
- In the **Fixed Selection Mode** groupbox, click **YT** (yeast) to display Panels PM 1-10 and 21-30
- In the **Fixed Selection Mode** groupbox, click **User** to display the first 20 Panel types in each data list

2. At the bottom of the page, click on column heading in the **List Status** grid to select which Panel type you want to show in the kinetic plots.
    - Row **L1** displays every Panel type available in the test data list
    - Row **L2** displays every Panel type available in the reference data list
    - Row **L1 & L2** displays only Panel types contained in BOTH lists
    - Row **S** to displays only those you selected in Fixed Selection Mode
    - Row **20** displays only the Panel types common to the test list, the reference list, and Fixed Selection Mode

Viewing single Panel comparative plots

Comparing test and reference plots one Panel at a time is useful for selecting the specific parameters by which you want to characterize your data and for visually inspecting superimposed plots to determine a desirable threshold. The **1 Panel Data** page is the place where you will refine the specifics of your plots and parameters.

1. Click the **1 Panel Data** sub-tab on the menu bar. The program displays the kinetic plots for the test data list by default. You'll note that the **List 1** radio button is selected in the **Display Mode** groupbox, which corresponds to the test data list.
    - Click the **List 2** radio button to display one Panel from the reference data list.
    - Click the **List 1vs2** radio button to display superimposed plots and areas of overlap between the test and reference data.
    - Use the Panel navigation tool across the bottom of the page to move from one Panel to another (click on the number of the Panel you want to display).



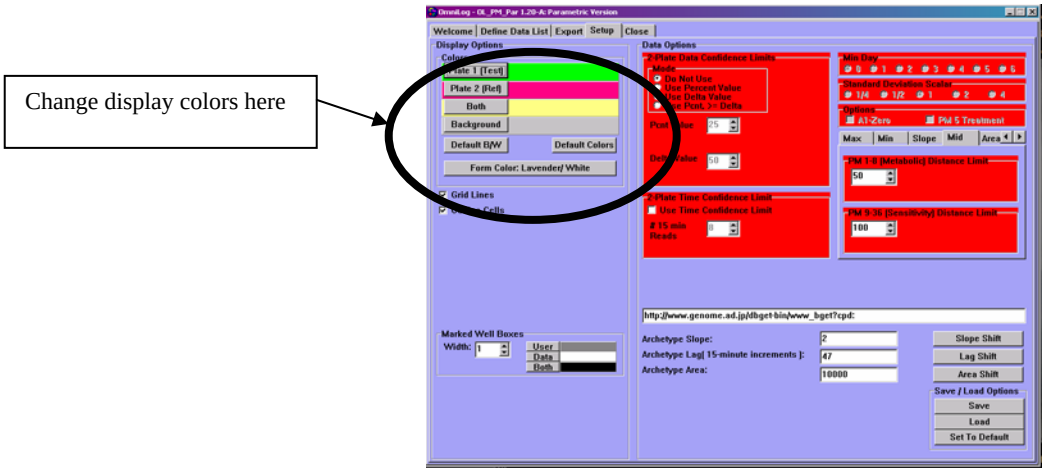
1 PANEL DATA PAGE
(SHOWING KINETIC PLOTS FOR ONE PANEL IN THE TEST DATA LIST)

1 entire grid = 1 Panel
one 8 x 12 well = 1 well of that Panel
narrow vertical gridlines in wells = markers of time
thick vertical lines in wells = end-of-day markers
colored, space-filling plots = average data over time
wiry black lines above and below curves = ± SD
horizontal lines in wells = OmniLog Units

2. All plots are displayed in default colors (green for test plots, red for reference plots, and yellow for superimposed areas in common). To change these colors, click the Setup tab on the menu bar. Go to the upper left corner of the page to change plot and background colors.
    - In **Display Options - Colors**, click **Panel 1 – Test**. A color dialog pops up. Click on the desired color for the test plots, then click **OK**.
    - In **Display Options - Colors**, click **Panel 2 – Ref**. A color dialog pops up. Click on the desired color for the reference plots, then click **OK**.
    - In **Display Options - Colors**, click **Both**. A color dialog pops up. Click on the desired color for the areas in common, then click **OK**.
    - In **Display Options - Colors**, click **Background**. A color dialog pops up. Click on the desired color for the grid areas behind the plots, then click **OK**.

The graphical plots shown on the 1 Panel Data page are AVERAGED plots of replicates.

- In **Display Options - Colors**, click **Default B/W**. All plots will automatically revert to black, white, and gray (this can be useful for black and white printing).
- In **Display Options - Colors**, click **Default Colors**. All plots will automatically revert to green (test), red (reference) and yellow (both).
- In **Display Options - Colors**, click **Form Color – Lavender/White**. This allows you to toggle the background color of the entire program page from pale purple to white.



SETUP PAGE

COLOR SELECTION DIALOG

3. Use the **Panel navigation tool** (**List Status)** across the bottom of the page to select which Panel number you want to display. Small carets appear immediately to the left and right of the selected number.

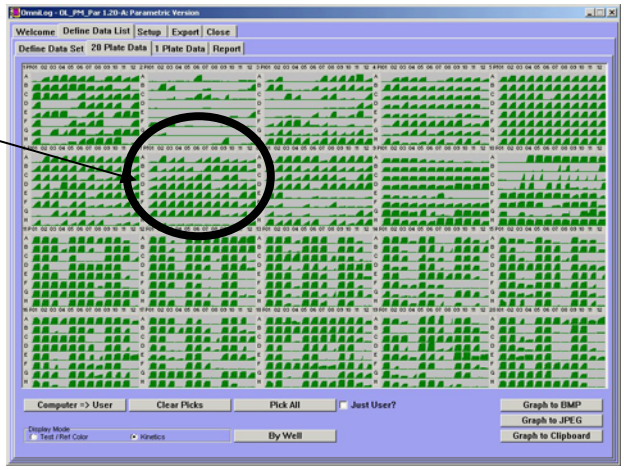
Viewing multiple Panels

The software also gives you the option of viewing 20 Panels types at once. This enables you to easily scan many kinetic plots and see patterns of differences and similarities. These distinctions stand out because the list and reference data plots are superimposed over each other.

As you work with your data, you will likely navigate frequently between the **1 Panel Data** page to the **20 Panel Data** page.

1. Click **20 Panel Data** tab on the menu bar.
2. Right-click on any well to view a description of the chemical contained in that well, along with the mode of action.
3. Double-click on any of these descriptions to go directly to the on-line KEGG website.

Each grid is a smaller version of the Panel displayed on the 1 Panel Data page

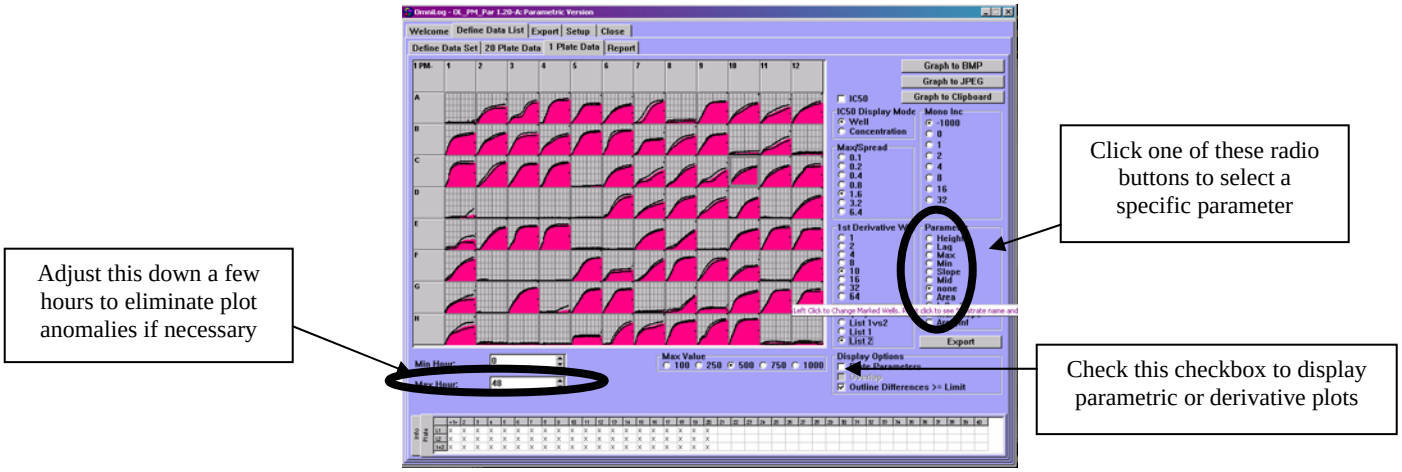


20 PANEL DATA PAGE

Selecting parameters

OmniLog PM enables you to reduce the multitude of data on your data lists by extracting specific parameters that focus on one or more aspects of the plot, depending on your areas of interest. The parameters are numerical characteristics of the plots displayed. Selecting specific parameters helps you find out more about the characteristics of an organism, as well as conduct statistical analyses of these parameters.

The most commonly selected parameters are described here; see “Advanced Functions” for descriptions of the other parameters.



1 PANEL DATA PAGE

(SHOWING KINETIC PLOTS FOR ONE PANEL ON THE REFERENCE DATA LIST)

MOST COMMONLY SELECTED PARAMETERS

Parameter	What it is	What to Click
Height	• the average height of the plot, in OmniLog Units • Area under the curve divided by number of reads • the blue lines represent a 'parametric plot,' which is a graphical representation of the minimum value, maximum value, lag time and Plateau time parameters	click on the **Average** radio button in the **Parameter** groupbox
Area	• the sum of all OmniLog values over all timepoints (area under the curve) • the blue lines represent the same parametric plot described above	click on the **Area** radio button in the **Parameter** groupbox
Inflection	• the time which to maximize slope or color change • the blue line represents the first derivative plot	click on the **Inflection** radio button in the **Parameter** groupbox

1. Click the radio button for the desired parameter. Keep the following in mind:
    - The Average Height and Area parameters are the most stable and well-behaved parameters. They have the disadvantage, however, of being sensitive to the accumulation of reads in excess of the Plateau Time. Consequently, it is advisable to adjust the Max Hour so that it is only slightly greater than the Plateau Time.

- The Inflection Time parameter is sensitive to anomalous upspikes in the plot. When selecting this parameter, you might want to reset the Max Hour designation for the experiment to a lower number. This will get rid of any anomalies in the plots (noise in the curves) and allow you to look at only a proscribed time period of the study. If, for example, the entry under **Max Hour** is 48, reducing it to 42 will eliminate any undesired noise during the period between 42 and 48 hours.

EXPERIMENTAL PARAMETERS

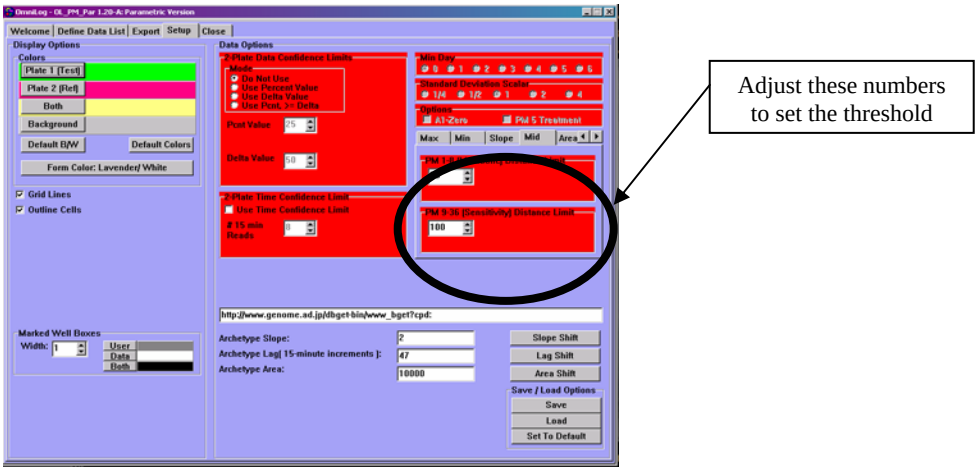
Parameter	What it is	What to Click
Lag	• Lag Time • MidTime –(MidHeight-MinHeight)/Slope	click on the **Lag** radio button in the **Parameter** groupbox
Max	• the 10th percentile highest value among all OmniLog values over all timepoints	click on the **Max** radio button in the **Parameter** groupbox
Min	• the 12th smallest OmniLog value among the first 48 reads over all timepoints	click on the **Min** radio button in the **Parameter** groupbox
Slope	• (sum of rises over run between 15% Time and MidTime –1 and rises over run between MidTime +1 and 85% Time) divided by (85% Time minus 15% Time) • 15% Time: The first time a OmniLog value exceeds the OmniLog value 15% of the way between MinHeight and MaxHeight • 85% Time: The first time a OmniLog value exceeds the OmniLog value 85% of the way between MinHeight and MaxHeight	click on the **Slope** radio button in the **Parameter** groupbox
Mid	• MidTime: The first time a OmniLog value exceeds the OmniLog value MidHeight • MidHeight: The OmniLog value midway between the MinHeight and the MaxHeight	click on the **Mid** radio button in the **Parameter** groupbox
Stop	• Plateau Time • MidTime + (MaxHeight-MidHeight)/Slope	click on the **Stop** radio button in the **Parameter** groupbox
None	• No numeric value given	click on the **None** radio button in the **Parameter** groupbox
Max Slope	• Maximum slope calculated using the 1st derivative curve routine	click on the **Max Slope** radio button in the **Parameter** groupbox
Area/Inf	• Inflection time divided by the last OmniLog value	click on the **Area/Inf** radio button in the **Parameter** groupbox

Setting a threshold is an art, interive process. What you view as a "strikingly different" will vary from experiment to experiment.

Setting a threshold

The software allows you to set a threshold (value of significance) as you analyze your data set. Thresholds provide a rapid way to select wells that are significantly different, while excluding insignificant ones.

1. Display the desired Panel on the **1 Panel Data** page.
2. Select the desired parameter, for example **Height**.
3. Look for wells with strikingly different plots. For example, a well might have a reference plot with a height of 211 and a height of 33 (a difference of 178).
4. Once you have a numerical value in mind for what you consider a significant difference for that data set, click the **Setup** tab on the menu bar.

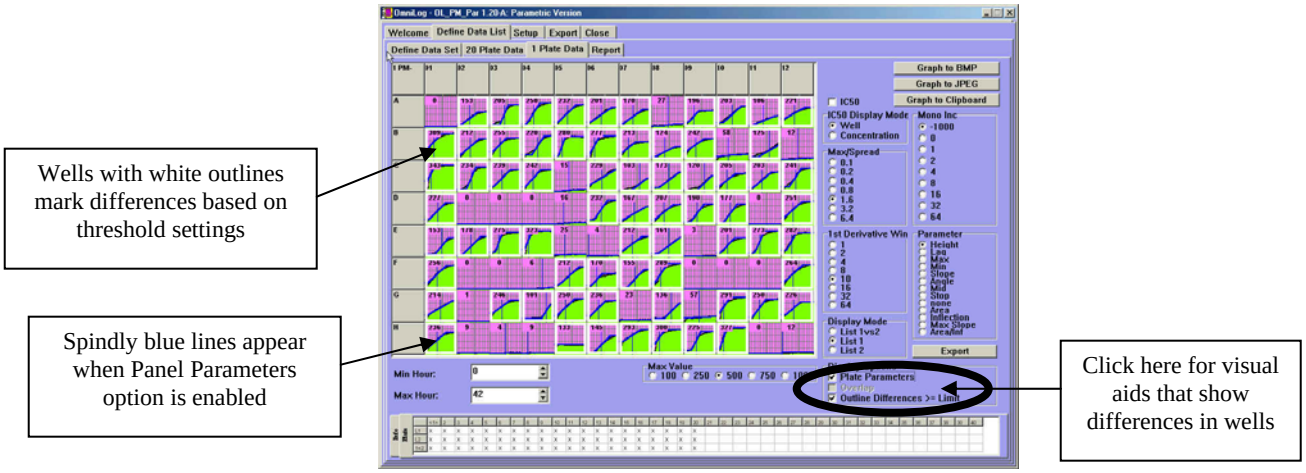


SETUP PAGE

5. At the right of the page, you'll see the **Distance Limit** edit boxes. The PM 1-8 distance limit covers metabolic Panels, while the PM 11-40 distance limit covers sensitivity Panels. Use the Up and Down arrows to adjust these numbers as desired. Remember, the purpose of changing the threshold is to create a more obvious visual aid to help you identify wells of scientific interest. You may, for example, want to set the PM 1-8 limit at 100 and the PM 11-40 limit at 150.
6. As soon as you start to adjust the numbers, the boxes will flash red. Press **Enter** once you reach the number you want in each box.
7. Click the **Define Data List** on the menu bar, then the **1 Panel Data** sub-tab. Check the **Outline Differences** options under the Display Options group box.

The outlined wells will change based on the thresholds you set. If necessary, go back and forth between pages, adjusting the thresholds until you are satisfied with the resulting outlined wells.

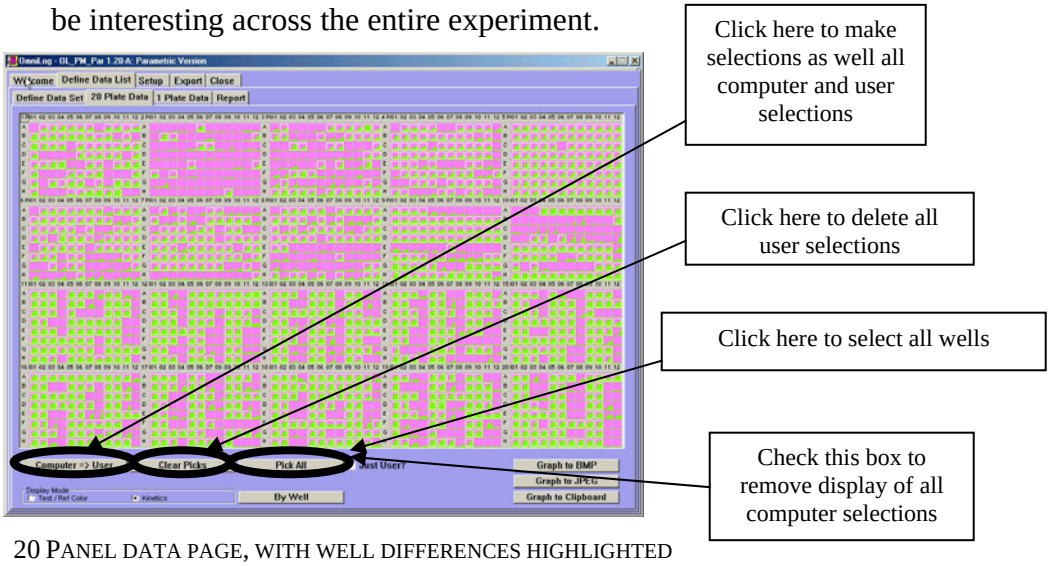
8. On the **1 Panel Data** page, click **Outline Differences** in the **Display Options** groupbox. This gives you a quick visual way to outline wells that are different. Use the **Panel navigation tools** across the bottom of the page to display other Panels in that data set. The same thresholds, parameters, and display option you selected will show for every Panel.



1 PANEL DATA PAGE, WITH WELL DIFFERENCES HIGHLIGHED

The white boxes that outline wells are tentative until you're completely satisfied with the thresholds and parameters you've selected. You then have to save your selections by using the functions at the bottom of the 20 Panel Data page.

9. Click the **20 Panel Data** tab to view all 20 Panels at once, with the white outlines giving you a sweeping view of which wells might be interesting across the entire experiment.



20 PANEL DATA PAGE, WITH WELL DIFFERENCES HIGHLIGHTED

Accepting or customizing selections

Remember:

The box outline color can be customized. White and black well outline is the default colors.

The white boxes that outline the differences between wells are very useful markers. The software enables you to either accept the program's automatic selections (white boxes) or manually change the boxed selections until you are satisfied with the data captured.

1. Make sure you are on the **20 Panel Data** page.
2. If you are satisfied with the thresholds you've entered and with the white boxes the program outlined based on your selected parameters and thresholds, click the **Computer → User** button at the bottom of the **20 Panel Data** page. The white outlines will all turn black, signifying that they are no longer tentative.
3. If you are not fully satisfied with the computer's selections, you can manually select or deselect individual wells, as follows:
   - Work on either the **1 Panel Data** page or the **20 Panel Data** page.
   - Make sure the **Outline Differences** checkbox is checked.
   - If you have NOT clicked **Computer → User**, you can select or deselect wells by clicking on them. Wells that the computer has already outlined white will turn black, signifying that you definitely want to select those wells. If you click a black-outlined well again, it will turn back to white (deselecting it).
   - If you HAVE clicked **Computer → User** (saving the computer's selections), you can deselect individual wells by clicking on them. The black outlines will turn white.
   - If you see wells that the computer did not select, you can select them by clicking on them. The outlines will turn gray. These are called "user picks." If you want to display ONLY these (not the computer's choices), check the **Just User** checkbox. All outlines will disappear except the gray ones you selected manually.
4. If desired, click **Clear Picks** on the **20 Panel Data** page to go back to the original computer selections, with no user selections outlined.
5. If desired, click **Pick All** on the **20 Panel Data** page to select ALL wells for inclusion in your data set. All wells will be outlined black or gray, indicating selection.

The reason for setting parameters, thresholds, and for carefully selecting and/or deselecting wells is to create a useful set of data for display and for creating a report for exporting to Excel or Access.

WHAT DO DIFFERENT COLORED WELL OUTLINES INDICATE?

White-Outlined Wells:

⇒ OmniLog PM software has performed calculations and selected these wells for inclusion in your data set. They are tentative selections until you save them.

Black-Outlined Wells:

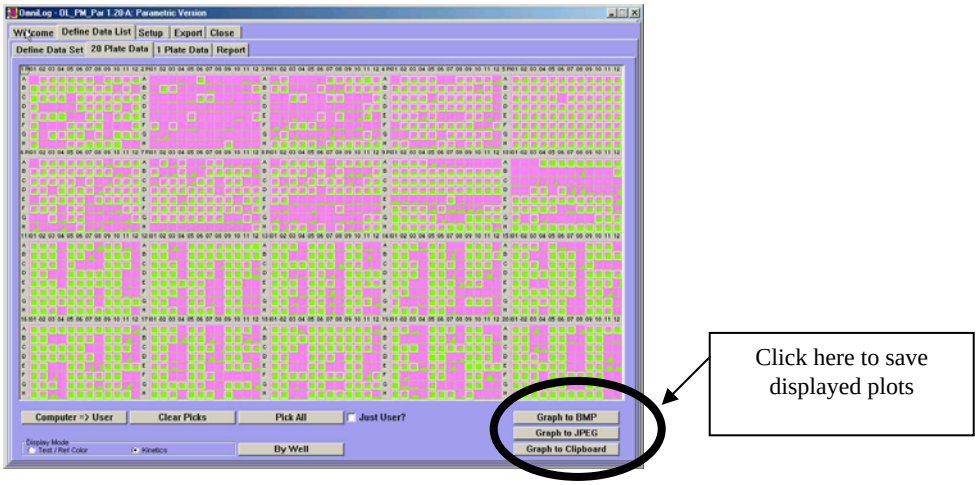
⇒ You have indicated that the computer's selection is also one that you would make manually for definite inclusion in the data set.

Gray-Outlined Wells:

⇒ You have selected wells that the software did not select. They will be included in your data set.

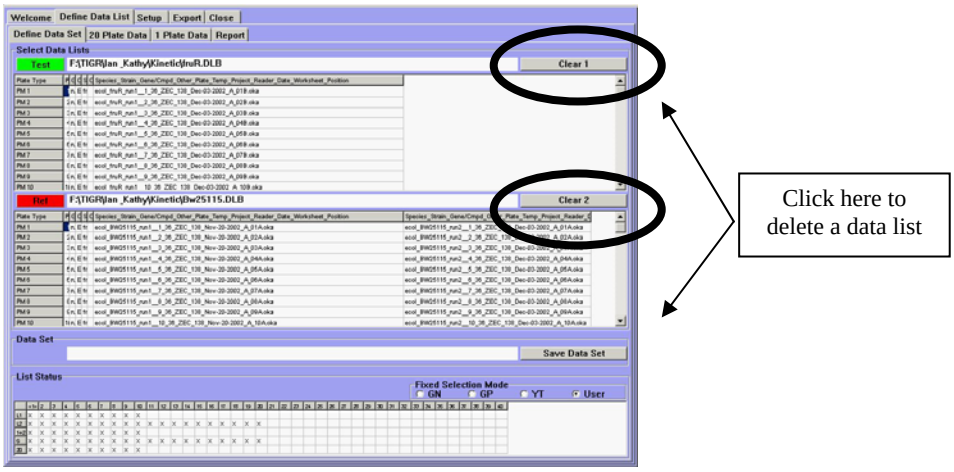
Saving graphical displays and viewing saved files

1. Once you are satisfied with the parameters you've selected, the set thresholds, and the wells selected for inclusion in the data set, click one of the following:
   - To save the displayed plot as a bitmap, click **Graph to BMP** at the lower right corner of the **20 Panel Data** page. Name your file as desired and save to a selected directory by clicking **Save**.
   - To save the displayed plot as a .jpeg, click **Graph to JPEG** at the lower right corner of the **20 Panel Data** page. Name your file as desired and save to a selected directory by clicking **Save**.
   - To copy the displayed plot directly into the clipboard, click **Graph to Clipboard** at the lower right corner of the page.



20 PANEL DATA PAGE

2. View a previously saved data set, as follows:
   - Click the **Define Data Set** tab on the menu bar.



DEFINE DATA SET PAGE

- Click **Clear 1** and **Clear 2** to delete the test and reference data lists.
- Click on the white box containing the words **Click here to load data list 1** and **Click here to load data list 2**. Retrieve the desired files from the Windows open file dialog. The files will contain all your previous settings, thresholds, and selected wells.
- Alternatively, you may save two data lists as a data set by clicking the **Save Data Set** button and using the pop-up **Save File Dialog**. The program will automatically append a .dsb extension to the data set file. Subsequently, you can load the data set by clicking the **Load Data Set** box and using the pop-up **Open File Dialog**. The two data lists comprising that data set will automatically be loaded.

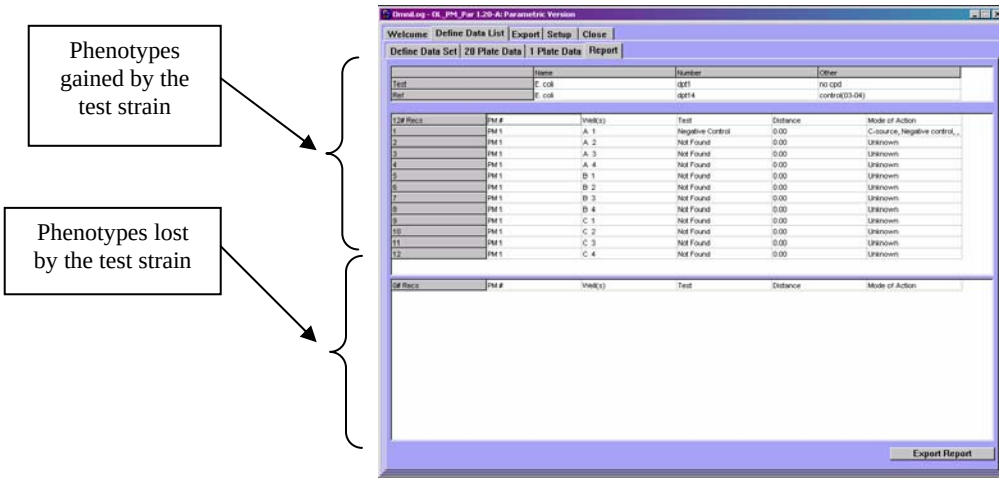
Generating non-graphical reports

The software allows you the option of displaying your parameter values in spreadsheet format for easy, thorough review. You can also save these spreadsheets as Excel .csv files.

1. Select a parameter on the **1 Panel Data** page.
2. Click the **Report** tab on the menu bar.
3. The parameter values of the user-selected wells on the **1 Panel Data** and **20 Panel data** pages will be transcribed into spreadsheet format.
4. Review the spreadsheet for the following:
    - Check the top of the report for organism strain name, strain number, and any other information you may have included for the first replicate of the test and reference data lists.

- Check the midsection of the list for phenotypes gained. For these, the test had a greater value than the reference for the parameter selected.
- Check the bottom of the report. This displays phenotypes lost by the test strain. These losses correspond to wells you selected that had a negative value for difference (test list average height – reference list average height). In other words, the reference had a greater value than the test for the parameter selected.

Note: These values will fall above the thresholds you set for that experiment.



SPREADSHEET REPORT

5. To export this information into Excel, click the **Export Report** button at the bottom right corner of the page. Name the file as desired and click **Save** to save as a .csv file.

Report Date : 4/14/2003 10:39:20 AM

	Name	Strain Nu	Other
Test	E. coli	dpt20(2)	control (20&21)
Ref	E. coli	dpt01	

Phenotypes Gained - Faster Growth / Resistance

PM	Wells	Test	Differenc	Mode of Action
PM14	A11	Sanguinari	177.37	ATPase, Na+/K+ and Mg++
PM14	C06	1-Hydroxy	232.98	chelator, lipophilic
PM14	G06	Potassium	155.04	oxidizing agent
PM19	G06, G07,	Dihydrostr	602.44	protein synthesis, aminoglycoside
PM16	E03, E04	Streptomy	458.67	protein synthesis, aminoglycoside
PM11	A04	Amikacin	158.06	protein synthesis, aminoglycoside
PM13	E08	Geneticin	157.18	protein synthesis, aminoglycoside
PM14	D02, D03	Cadmium	377.65	transport, toxic cation
PM14	F06, F07	Piperacilli	430.77	wall, lactam

Phenotypes Lost - Slower Growth / Sensitivity

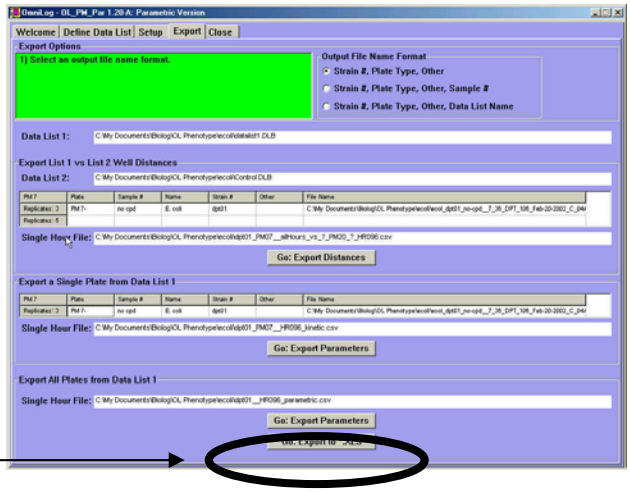
PM	Wells	Test	Differenc	Mode of Action
PM01	A07	L-Aspartic	-248.96	C-source, amino acid
PM01	D01	L-Asparag	-162.74	C-source, amino acid
PM01	A12	Dulcitol	-208.59	C-source, carbohydrate
PM01	A05	Succinic A	-176.07	C-source, carbohydrate
PM02	F03	Melibionic	-161.93	C-source, carbohydrate
PM01	G11	D-Malic A	-268.62	C-source, carboxylate
PM01	G12	L-Malic Ac	-247.96	C-source, carboxylate
PM01	F05	Fumaric A	-246.13	C-source, carboxylate
PM01	C03	D,L-Malic	-241.4	C-source, carboxylate

PRINTOUT OF PARTIAL PAGE OF SPREADSHEET REPORT IMPORTED INTO EXCEL

Exporting parameter values

OmniLog PM enables you to export your parameter values into Excel as multi-worksheet .xls files. This is done one data list at a time. These worksheets organize the parameters according to Panel number or display format.

1. With the data list to be exported loaded as Data List 1 (also called the test data list) in the **1 Panel data** page, select the **Max Hour** setting desired.
2. Click the **Export** tab on the menu bar.
3. Click the **Go: Export to XLS** button at the bottom of the page.



Click here to export a parameter values list into multi-worksheet .xls file

EXPORT PAGE

4. Name and save the file as desired.

Plate	Replicate	Well	Chemical	Mode of Action	Maximum	Minimum Height Well 0	Minimum Height Well 1
					168.00	500.00	500.00
PM11	average	A01-A04	Amikacin	protein synthesis, ami	46.00	16.00	0.00
PM11	average	A05-A08	Chlortetra	protein synthesis, tetr	46.00	16.00	0.00
PM11	average	A09-A12	Lincomyci	protein synthesis	46.00	16.00	0.00
PM11	average	B01-B04	Amoxicilli	wall, lactam	46.00	16.00	0.00
PM11	average	B05-B08	Cloxacillin	wall, lactam	46.00	16.00	0.00
PM11	average	B09-B12	Lomefloxa	DNA topoisomerase,	46.00	16.00	0.00
PM11	average	C01-C04	Bleomycin	DNA polymerase	46.00	16.00	0.00
PM11	average	C05-C08	Colistin	membrane, cyclic pep	46.00	16.00	0.00
PM11	average	C09-C12	Minocyclin	protein synthesis, tetr	46.00	16.00	0.00
PM11	average	D01-D04	Capreomy	respiration, Na+-K+ A	46.00	16.00	0.00
PM11	average	D05-D08	Demecloc	protein synthesis, tetr	46.00	16.00	0.00
PM11	average	D09-D12	Nafcillin	wall, lactam	46.00	16.00	0.00
PM11	average	E01-E04	Cefazolin	wall, cephalosporin	46.00	16.00	0.00
PM11	average	E05-E08	Enoxacin	DNA topoisomerase,	46.00	16.00	0.00
PM11	average	E09-E12	Nalidixic a	DNA topoisomerase	46.00	16.00	0.00
PM11	average	F01-F04	Cefotaxim	wall, cephalosporin	46.00	16.00	0.00
PM11	average	F05-F08	Erythromy	protein synthesis, mac	46.00	16.00	0.00
PM11	average	F09-F12	Neomycin	protein synthesis, ami	46.00	16.00	0.00
PM11	average	G01-G04	Ceftriaxon	wall, cephalosporin	46.00	16.00	16.00
PM11	average	G05-G08	Gentamici	protein synthesis, ami	46.00	16.00	0.00
PM11	average	G09-G12	Norfloxaci	DNA topoisomerase,	46.00	16.00	0.00
PM11	average	H01-H04	Cephalothi	wall, cephalosporin	46.00	16.00	1.00
PM11	average	H05-H08	Kanamyci	protein synthesis, ami	46.00	16.00	0.00
PM11	average	H09-H12	Ofloxacin	DNA topoisomerase,	46.00	16.00	0.00
PM12	average	A01-A04	Penicillin	wall, lactam	46.00	2.00	0.00

PRINTOUT OF PARTIAL PAGE OF .XLS WORKSHEET EXPORTED INTO EXCEL

WHAT'S ON EXPORTED MULTI-WORKSHEETS?

⇒ Meta Params worksheet: Panels 1-8, listed from well A1 through H12, reporting all 12 parameters, with each parameter in its own column
⇒ pH Salt Params worksheet: Panels 9 & 10, listed as above
⇒ Sensitivity Params worksheet: Panels 11-40, listed as above
⇒ 8 x 12 format: 8 rows and 12 columns, wells: A1 – H12, representing each parameter, with Panels arranged vertically and parameters arranged horizontally